COASTAL GUARDIANS AND PRECARIOUS LIVELIHOODS: THE POLITICAL ECOLOGY OF MANGROVE NARRATIVES

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Abstract

This dissertation combines the historical and ethnographical analysis to examine the mangrove narratives, discursive practices, and the impacts on the livelihoods of local communities in Thailand. Mangrove narratives are constructed generalized statements about processes and causes of, and solutions to mangrove and related environmental degradations that are accepted as the "truths" and can assumedly be applied universally. It uses a critical political ecology approach which focuses on the de/construction of orthodoxy science and environmental discourse, using mangrove narrative as a case study. The research is based on the 17 months of field research conducted in Talumphuk, the rural fishing villages in southern Thailand. It investigates the linkage between broader Thailand political economic development policies, Western ideologies and influences on Thai state, the mangrove narratives and discursive practices, and on-the-ground conditions and livelihoods of small-scale fishers. It traces the historical root of scientific forestry and institutions since the colonial period, which then passed on to the present-day mangrove management technique. It finds that mangrove narratives, created as a response to mangrove deforestation from the shrimp farming development, reinforced by the 2004 Indian Ocean tsunami as "coastal guardian," have turned into discursive practices of mangrove planting and territorialization, exacerbating the already precarious livelihoods of Talumphuk fishers particularly the poor and marginalized group.

Dedications

To my mom, dad, and sisters who have always been incredibly supportive throughout this long journey of mine. To my husband, “Pure,” who has always been there for me. To P’Korn and P’Wow, my host family in Talumphuk, the kindest people I have ever met.

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TABLE OF CONTENTS

List of Figures

CHAPTER 1. INTRODUCTION

Laem Talumphuk is a small fishing village with a long stretch of white sandy beach on the east and dense mangrove forests on the west of its crescent-shaped cape. In 1962, the devastating storm Harriet made landfall directly on Talumphuk, killing more than 1,300 people. Many of the victims were seasonal fishers living in temporary shacks on the beach who got washed away into the sea by waves. Prior to the storm, some shack dwellers sought refuge in the two or three two-storey concrete houses in Plaisai. It was estimated that more than 200 people were in each of those houses. At the peak of the storm, however, the water rose up to 5 m high, trapping all those who had taken shelter in the concrete houses. Some others who remained in their nipa palm houses survived because they were able to float using their roofs.

Figure 1.1. After the storm. Photographs taken by Truk Pruksasri. (Sources: www.khaosod.co.th and www.gotonakhon.com)

After the storm subsided and the water receded, the extent of the devastation became clear. The storm destroyed almost all structures above ground and killed thousands of people within one night. The next day, a boat from Pak Phanang announced that another storm was

approaching that night. Some people panicked and started walking towards Pak Phanang and remained in the public shelter for a month. Those who decided to remain in Talumphuk started to collect whatever scraps they could find to survive. Eventually, after two weeks, help from outside began to arrive. Subsequently, Talumphuk has become relatively well-known for such small fishing village. In 2002, a low-budget Thai movie named, “Taloompuk” was made based on a fictional story but centered on the events surrounding this storm. This movie has made Talumphuk even more well-known with the image of being a vulnerable place from storms.

During the storm season, villagers can expect to receive a lot of free goodies, or what are usually called, “survival kits.” These mostly including canned food, instant noodles, rice, and candles, given by various organizations. These images lay the seed to the idea that coastal areas are vulnerable to natural disasters, and need “help” in the forms of development projects. Additionally, it reinforces narratives on the role of mangrove forests that it can always shelter people from storms. The narratives painted the picture of mangrove as a green goodness or a mighty coastal guardian, protecting both the environment, the coast, and coastal people.

In the past, Talumphuk was known for its abundant fishery resources from Pak Phanang Bay on the west and from the open sea of the Gulf of Thailand on the east. Seasonal fishers from all over the place as far as Pattani province came to this abundant fishing grounds in Talumphuk. The glorious days of Talumphuk has however turned into a thing of the past, first when it was hit by Harriet storm, but later and more importantly, when an intensive shrimp farming boom transformed Talumphuk in the 1970s – 1990s. The devastation caused by shrimp farming operations and the subsequent mangrove degradation has profoundly altered the landscape of Talumphuk and the livelihoods of its residents until present day. Although the shrimp farming practice itself has caused coastal environmental degradation and reduced resources access to

many local fishers, the subsequent mangrove planting practice stemming from mangrove narratives has led to even more restriction to resource access and large-scale environmental degradation in Talumphuk and surrounding areas.

The short documentary produced by Thai Public Broadcasting Service (TPBS) channel portrayed Talumphuk as a blissful place where the local community is blessed with abundant resources and lives harmoniously. Its white sandy beach, one of the most beautiful beaches in the area, attract many local tourists during holiday seasons, along with fresh and cheap seafood available for tourists from a couple restaurant shacks as well as seafood product stalls along the beach. Contrary to its public image as a blissful glorious place, Talumphuk has been the poorest subdistrict in Pak Phanang District for decades. Furthermore, Pak Phanang, which used to be dubbed as "the rice bowl of the South", has been the poorest region in Nakhon Si Thammarat Province for decades (S Boromthanarat, Cobb, & Lee, 1991a). The Thai government has led several efforts to restore Pak Phanang's prosperity through mega projects such as the royal initiated "Pak Phanang River Basin Development Project." However, the economy of Pak Phanang continues to be stagnant, if not declining.

Following the mangrove narratives, a mangrove reforestation project was initiated as a response to the mangrove degradation from shrimp farming development. The project was promoted and supported widely and heavily both by the Thai government, international organizations, financial institutions, educational institutions, and private sectors. More recently, mangrove reforestation was resurrected and reinforced with more intensity and caught public attention after the 2004 Indian Ocean Tsunami. Since the image of Talumphuk has always been associated with hazards, it was undoubtedly selected to participate in the project. Mangrove reforestation is expected to have beneficial impacts that restore the coastal environment, in turn

improving the quality of lives of Pak Phanang and Talumphuk's residents. Yet again, it turned out that the long-standing issues Talumphuk's residents have faced seem to persist and even get worse.

This puzzle and contradiction have compelled me to find out "what really went wrong" in Talumphuk. Such a situation is not unique, and can be found in many places in Thailand as well as in many other developing countries. I examine mangrove narratives in Thailand as a case study, to understand *how environmental narratives are constructed and reproduced, and how such discursive practices intersect with contemporary issues faced by local residents in Talumphuk.* To approach this overarching question, my research asks the following working questions:

1. What are the narratives and discursive practices on mangrove management?
2. What events and policies have affected the construction and reproduction of such narratives?
3. How do mangrove narratives and discursive practices intersect with the livelihoods and aspirations of local communities?

Theoretical Framework

This research is informed by political ecological framework. Political ecology challenges the conventional depoliticized explanations that environmental crises are the products of poor management, inappropriate technology, or overpopulation. Instead, political ecology seeks to understand the complex relations between nature and society through the analysis of the forms of access and control over resources, and their implications for livelihoods and environment. Since its foundation in the 1970s, political ecology has gone through various challenges, criticisms, and improvements until it ripened in the 1990s. With the influence from poststructuralism in the

1990s, new political ecology focuses more on the hegemony of how environmental issues and knowledge are constructed, problematized, and managed (Watts, 2008). Within the political ecology framework, I will discuss the main tools I used to inform and analyze my research including the construction of environmental orthodoxy science and discursive practices, statecraft and territorialization, community-based natural resource management (CBNRM), and the notion of everyday vulnerability.

"Environmental narratives" and the construction of environmental knowledge.

Early political ecology analysis focused on examining the linkage between capitalism and environmental degradation. Yet, environmental degradation was discussed as though the science regarding environmental degradation is already agreed upon in its legitimacy. Forsyth (2003) argues that it is important to also question how environmental knowledge is socially, culturally, or politically constructed. His book "Critical Political Ecology" calls for critical assessment about the use of conventional environmental science, which is also called 'positivist' science or 'orthodoxy science.' He also uses the term 'environmental orthodoxy' to refer to 'positivist' science about environment knowledge particularly regarding environmental degradation. 'Positivist' science assumes that it can *accurately* explain the biophysical processes; and that it is *universal* (can be applied to any places) and *neutral* (objective or free from value and bias) (Forsyth, 2003; Forsyth & Walker, 2008). A number of studies and evidence show that such claims do not always reflect the reality. For example, the Universal Soil Loss Equation was created as a response to the Dust Bowl in the 1930s in the Great Plain in the United States. It was later used worldwide to calculate the acceptable soil loss rate for farmers. One main problem is that in order to determine the acceptable rate, we would also need to know the rate of local soil

generation. Measuring this local rate requires sophisticated equipment and calculation, which is rarely measured and obtained (Blaikie, 1985).

'Positivist' science when used in the field of the environment becomes 'environmental orthodoxy' or '*environmental narratives*.' I will use the term 'environmental narratives' from here on in this dissertation. 'Environmental narratives' are generalized and commonly heard statements about environmental processes or concepts that are dominated and mostly accepted as the "truths," regardless of how accurate they are. Narratives are similar to stories in that they have beginnings, middles, and ends that serve any purposes of the story creators and tellers. Environmental narratives are problematic for various reasons. First, it simplifies the complex and long-term biophysical processes into a general, simple, and static statement. This kind of statement turns dynamic and complex processes into a static snapshot. Secondly, it overlooks the role of the language and other influences in the framing of both the notion of environmental problems and the production of environmental science. Thirdly, it creates the social order that gives legitimacy to the "expert" and excludes "lay" people from participation in knowledge production. This social order also defines who is to blame and who is responsible for degradation. Fourthly, it can be used as a political tool to support one's agenda by claiming the legitimacy of science and experts. Finally, when such environmental orthodoxy translates into policies, it may cause even more problems to both the environment and people; particularly to those excluded from the knowledge production process (Forsyth, 2003). Policies that do not address the underlying causes of biophysical problems cannot manage environmental issues properly and sustainably, or worse, they can even exacerbate the problems. More importantly, many policies impose unfair and unwarranted restrictions on the livelihoods of already marginalized people.

Another important point is the issue of "framing" both the notion of environmental problems and the production of environmental knowledge. Environmental orthodoxy and 'positivist' science is used without discerning the influence of language, historical, cultural, political and institutional contexts. It is first important to ask, 'whose problem' and 'by whom' is the problem defined. For example, Fairhead and Leach (1996) explain that colonial officers in Guinea perceived the forest island in Guinea as an indication of a "problem" [of deforestation] because they thought that the island was a relic of what used to be large healthy forest. However, for local people, the forest island was what they had created when they settled as a result of their local practices of forest management such as setting bush fires. As a result, the notion of the problem was different between colonial officers and local villagers. Not taking into account the multiple views regarding the notion of an "environmental problems" may lead to unwarranted policies (Fairhead & Leach, 1996). The claim that 'positivist' science is *neutral*, *accurate*, and *universal* also overlooks the influence of language, historical, cultural, and institutional context during the production of science.

Forsyth emphasizes that by critiquing 'environmental orthodoxy,' he does not mean to discount the importance of environmental science, nor to say that environmental problems do not exist, nor does it support the optimistic argument that economic growth and modernization will eventually find the solutions to environmental problems. In fact, he argues that a more critical use of environmental knowledge helps explains environmental problems, which will lead to better policies and management and avoid unwarranted hardships for marginalized people. It is also important to include multiple views and increase participation in both the production of knowledge and the identifying environmental problems particularly local views and knowledge without essentializing and romanticizing them (Forsyth, 2003).

Statecraft and territorialization.

Mangrove narrative can be an instrument for the state to take control of resources and people by means of territoriality and make the subjects more "legible." My research is informed by James C. Scott's notion of legibility and state-making (Scott, 1998, 2010) and Vandergeest and Peluso's concept of territorialization (Vandergeest & Peluso, 1995). Scott explains the social engineering of the early modern statecraft. He discusses the process of state building and enclosure during the period around 16th – 18th century in Europe and as late as the 19th century in the Southeast Asia. Before this modern state building effort, which included Thailand, the central rulers were concerned with controlling people, rather than territory or geographical space. They tried to obtain tax and labor, but the result was unsatisfactory because people were scattered and diverse. They spoke different languages, used different measurement scales, grew diverse kinds of crops, and so on. This diversity made it hard for the state to control people and collect tax. In the process of modern state-building, the first step for the state was to try to find ways to be more efficient in collecting tax and obtaining labor. The state thus devised various methods to simplify its subjects and territory, or to make them "legible" to the state. Examples of various methods states used to make its subjects legible include: standardizing the measurement scale; assigning surnames to its subjects so the state can conduct censuses and record them permanently; settling nomadic people, and promoting the permanent and monocropping (to be easily assessed and collected such as wet paddy rice in the SE Asia).

With regards to natural resources, the state created categories to distinguish between valuable resources (to the state) such as "timber," "game," and "livestock" and nonvaluable resources such as "weed," "underbrush," and "prey". By creating such categories, it gave legitimacy for states (and others) to get rid of nonvaluable kinds. For forest resources, nontimber

species were cut down so that the timber could be easily assessed, counted, and appropriated. From this, the social categories were also created, dividing experts, who received special training, from the rest.

One important tool the state used was the cadastral map. The map was not only used to navigate the geographical space, but more importantly, to create the social context and order. For example, the map was used to impose land boundaries where they did not exist before. The demarcation of boundaries does not only create physical boundaries, but it also creates social identities and categories. It also defines access to an area, which in turn, defines certain activities that people inside and outside the area can and can't do. These processes can be termed "territoriality." Territoriality is defined as the "attempt by an individual or group to influence, affect, or control objects, people, and relationships by delimiting and asserting control over a geographic area" (Sack, 1983).

Similarly, territorialization is concerned with the exclusion or inclusion of people within particular geographic boundaries, as well as with the control of what people can and can't do or access to natural resources within those boundaries (Vandergeest & Peluso, 1995). In addition, the system of private property can be materialized using maps, resulting in the creation of landed property and inheritance, which may result in class division and exploitation. Although such social engineering and technology of statecraft are claimed by the state to be for the improvement of people's welfare, the results may be the opposite. For Thai states, the attempts to control the use of large portions of national territory by demarcating and defining it as forest during the state-making period of around 18th - 19th century is relatively well documented. However, the recent territorialization of the last frontier of forests in Thailand, which is the mangrove forest, in the guise of modern coastal management is rather unknown.

Community-based natural resource management (CBNRM).

A common theme in the political ecological studies is a critical examination of "community" in the approach of community-based natural resource management (CBNRM). The CBNRM approach was revived around the same time as the emergence of neoliberalism (the resurgence of neoclassical political economic model) around the 1980s that urges the government to recede and let the market and "rational" individuals play their roles. Although I will discuss in more details about the role of Thai government under neoliberalism in the next chapter, I'd like to briefly note that the government has never receded as believed. The government only plays different roles. In line with the idea of small government in 1980s, CBNRM approach became the accepted paradigm in resource management. CBNRM is based on the ideas that communities who use resources and live close to resources they use should be able to manage those resources more efficiently because they know their resources best. In addition, they (communities) can monitor their resources closely, which is more efficient and can save monitoring costs. Coupled with the concern about public participation and environmental justice, as well as public attention of widespread resource degradation, which also emerged around that time, the CBNRM approach rapidly became the dominant paradigm in natural resource management and caught the attention of many international donors. It has been used by many NGOs and even the government as a means to manage resources and promote social development.

However, a caveat is that CBNRM can be abused by both local elites and outsiders as a means to control land and exclude local use. The resources may fall into the wrong hands who exploit resources for their own benefits while exclude and marginalize the rest of communities. It can be used by the state as a means of expanding their territorial control by demarcating and

confining geographical areas and specifying certain activities that people can or can't do inside and outside the areas. This way, contrary to the assumption that CBNRM is a roll-back of the government, it turns out to be an instrument used by the state to bring itself closer to people so that it can monitor and control people more easily (Blaikie, 2006).

The problems of CBNRM approach arise when CBNRM is based on a simplified notion of community that already exist. This assumption does not take into account the historical, socio-economic, political, and cultural context of local people. Instead of essentializing a preexisting community as if it is homogenous, we should think of CBNRM as a "community building process." This process must be based on local social and geographical contexts, and their articulation.

Elinor Ostrom studied many CBNRM projects around the world and found common conditions that most successful CBNRM projects share (Ostrom, 2015). She outlined eight design principles for the long-enduring common-pool resource (CPR) institutions that include: (1) boundaries of the CPR and those who have rights to withdraw from CPR are clearly defined; (2) resource use rules, provision rules, and local conditions are congruence; (3) operational rules are made by participation of those who are affected by the rules; (4) rules are monitored by those who are accountable to appropriators; (5) graduated sanctions are assessed to violators by other appropriators or accountable officials; (6) the conflict among appropriators or between appropriators and officials can be resolved through the easily accessible and low-cost local arenas; (7) external authorities recognize the rights of appropriators to devise their rules; and (8) for CPRs that are parts of larger systems, rules are organized in multiple layers of nested enterprise (Ostrom, 2015). From these guiding principles, it shows that CBNRM has the potential to be beneficial both to communities and natural resources when the above risks and

constraints are acknowledged. The most immediate benefit is that natural resources are well - managed. The decision-making process can foster community participation, cooperation, and democracy, as well as increases strong ties of community which can serve as a social safety net in difficult times. Thus, this process has long term social development benefits in addition to resource management goal.

Small-scale fisheries (SSF), poverty, and vulnerability.

There are various definitions of small-scale fisheries (SSF) but the most notable characteristic is the use of vessels less than 15 m in length with no engine or motorized engines of less than 85 horsepower. With this limitation, SSF tends to operate in waters close to shore, use simple fishing gear, and often uses family members or close relatives or acquaintances as crew (Kehoe, 2016). Therefore, the fishing grounds for SSF is usually limited to within 8 km from the coast; but it is usually only about 3 km for my research site.

SSF has often been associated with poverty and it is said that small-scale fishers are "the poorest of the poor". This view is often linked with the Malthusian perception of poverty. For example, resource degradation is said to be caused by overexploitation due to population growth, which in turn leads to poverty and famine among fishers. Another similar view taken is Garret Hardin's (1968) "Tragedy of the Common" thesis to explain the roots of poverty among small-scale fishers, confusing between "common property" and "open-access property." Another side of the same coin argues that fishing is "an activity of the last resort" meaning that fishers are already poor and landless so there is no other option for them besides fishing. In any case, such views are simplistic and fail to understand the cause and nature of poverty in fishery-dependent communities (Béné, 2003).

Stemming from Amartya Sen's analysis of poverty and entitlement (Sen, 1982), scholars find that poverty is an expression of the failure of entitlement, which is closely relatedly to the concept of "power". The poor lack power and are excluded from most decision-making processes, which in turn makes them even more marginalized. Therefore, it is important to focus on the issue of power over access, control, and redistribution of resources, by investigating the social, cultural, and political elements which shape the relationships between poor people and natural resources, as well as between the poor and the well-off (Béné, 2003). While poverty is related to vulnerability, they are not the same. Some scholars such as Béné (2009) differentiates poverty as "structural poverty" and vulnerability as "temporary poverty." Structurally poor households have difficulties in maintaining the minimum living standards in spite of their access to resources. Risks and shocks can promptly drive them below the line (Béné, 2009).

To put the issues of poverty, entitlement, and vulnerability together, I found that the notion of *the everyday vulnerabilities* or *the livelihood vulnerabilities* suggested by Ribot (2010, 2011) are very useful in conceptualizing this complex situation. In his article "Vulnerability does not just Fall from the Sky: Toward Multi-scale Pro-poor Climate Policy" (2010), Ribot suggests that most current and dominant studies on vulnerability tend to focus on impacts from hazards and disasters and try to find ways for people, particularly the poor to get back to their *status quo* as if their *status quo* is already fine. In fact, poor people and marginal groups are faced with everyday vulnerabilities such as loss of livelihood and assets, dislocation, hunger, and famine on top of the vulnerabilities due to hazards and disasters. In turn, different outcomes from hazards and disasters are due to place-based social and political-economic situations. Therefore, the inability to sustain stress is a product of on-the ground unequal access to resources, lack of representation, or inadequate systems of early warning. Therefore, the livelihood vulnerability

approach involves the analysis of livelihood strategies that are embedded in the larger ecological and social political-economic environment by putting vulnerability in context on the ground (Ribot, 2010).

Methodology, Research Site and Fieldwork Experiences (including Ethics and Validity)

I used qualitative research in this study, specifically ethnographic research. This research is divided into two parts. The first part is a document research on the historical and general background of Thailand's cultural, social, political, economic, natural resources, environmental, and development policies, specifically in the Pak Phanang region. The types of documents used include historical records; reports from the government, NGOs, and multilateral organizations; and scientific reports and journal articles. The second part is ethnographic fieldwork, which includes interviews and participant observations.

I initially chose this site because the devastating typhoon Harriet has made it a national headline. From this event, there are lots more documents about the historical background of this area available online compared to other small fishing villages. My original plan was to stay for three months before deciding whether this site was suitable for my research. It turned out to be the perfect research site where I could observe processes similar to what I have read in scholarly articles that I never imagined to exist. It is in a remote location, almost like an outpost, but I still found so much state control. The issue of the forest enclosure and plantation that has made headlines in Thailand and Southeast Asia during the past two or three decades can still be found here, but this time with mangrove forests. It is also filled with micro-politics and conflict but is rich in local culture and moral economy and is in the process of degrading in one village whilst growing in another adjacent village.

When I first got into the field, I walked into the Subdistrict Administrative Organizations (SAO) office and inform the head of the SAO that I'd like to conduct research in the villages. They gave me very welcoming response and let me stay at the Local Public Health Service. I stayed there for the first six months. Later, I met my host family and moved in to stay with them for the rest of the time. I spent a total of 17 months in the field between August 2014 to February 2016.

During my first three months in the field, I learned and observed the villagers' lives and activities. When I saw any villagers who sat in a group, chatting, or doing things relating to their livelihoods, I would stop by and introduce myself and have informal conversations with them. By the end of the first three months, I got to know a lot of people and most villagers knew who I was and what I was doing in the village. Besides, word spreads extremely quickly in such a small and closed community.

I learnt more about the local politics and conflicts among the villagers; the different kinds of livelihoods there are in the villages; the demography of villagers; and their various seasonal activities. After understanding more about villagers' dynamics and micropolitics, I adjusted my strategy to ensure my impartiality since the villagers are so divisive with regards to local politics. Subsequently, I used a combination of random, purposive, and snowball samplings to select the participants for my interviews.

When in the field, every moment was an opportunity to collect information. I participated in almost all social functions that occurred while I was there, such as memorial services, weddings and religious events. I also participated in the two-day training for villagers to be "Volunteer Mangrove Protectors". Sometimes I just talked to villagers, or even visitors/tourists I met when I walked by the beach. When I heard that there were some people who owned the

shrimp ponds or raised cows in the village, I sought to talk to those people. At other times, my informants suggested the persons I should talk to regarding certain issues. When I learned about an agricultural cooperative in Pak Phanang, I sought an interview with one of the officials to get specific information about the cooperative and they ways the villagers get involved. I included as diverse kinds of livelihoods as possible in my sample. In addition, I drew similar number of respondents from both women and men, and from different age groups in order to understand how different generations and genders perceive things differently, do things differently, and cope with things differently.

I also chose the purposive samplings according to different issues that I wanted to learn about. For example, I wanted to learn about different kinds of coastal hazards. I then roughly categorized the selected informants into those who were affected by coastal erosion, storm surge, and flooding. Then there were those who were affected either directly or indirectly. Those who were directly affected by erosion could also be divided into those whose houses were destroyed and had no place to stay, and those whose restaurants periodically needed to be repaired. I also asked about the coastal hazards to those who were distantly affected by them to learn about how differently they would look at this issue.

I interviewed and had informal conversations with a member of the House of Representatives of Nakhon Si Thammarat Province, Pak Phanang District Chief, all the local leaders in Talumphuk, some local leaders of other subdistricts, the Director of Pak Phanang District Health Service, local NGOs, scientists in Bangkok and many local and central government officials in the Forest Department, Fisheries Department, Marine Department, and the Department of Marine and Coastal Resources both in Bangkok, in Pak Phanang town, or when they came to Talumphuk.

I learned that the villagers don't like any kind of formal or official practices including interviews and focus groups. They preferred to have casual conversations (although I always asked for their consent whether I could use the information to write). Villagers often sit in a groups and chat in front of someone's houses or in the local coffee shops as part of their daily routines. Therefore, after trying many times to organize formal focus groups, I found that joining, or even just listening to, the group conversations was a better way to gain insightful information and much more fun and pleasant for both myself and villagers. Even when I made an appointment to talk with one informant, I always found they were already sat in a group who all wanted to answer my questions regardless of to whom my questions were addressed to. This way, informants felt more comfortable and less shy to talk to me and thus, I always gained so much more information. All the villagers spoke in a strong Southern dialect that I was able to understand. Villagers feel more comfortable and can talk more freely when they speak their dialect rather than when speaking the central language. Sometimes villagers felt obligated to speak the central language to me during the one on one interviews, even though I insisted otherwise. On the other hand, when they had company or were sat in a group, they felt more relaxed and completely abandoned the need to speak the central language, which in turn made the interview more relaxed, more fun, and more comfortable for all parties.

In total, I had 85 formal interview sessions with villagers, village and district chiefs and officials, central and local government officials, scientists, and representative of local NGOs. Most of my interview participants were the villagers and most of my interviews were in-depth which took about 1 – 2 hour(s) for each session. A few sessions included only one participant, but most sessions included two to ten participants. The in-depth interviews focused on their life history and livelihood, but I also focused on specific issues for different groups of participants.

For example, with regards to community-based natural resource management (CBNRM), I interviewed villagers who both were and were not involve in CBNRM, as well as government officials who work with villagers and those who only work with the village leaders.

I recorded the audio for all but one of my formal interview sessions and transcribed them in Thai language. Then I analyzed the data in Thai language using assistance from NVivo. The most tedious part was to transcribe the Southern dialect into text. Although I can easily understand the spoken dialect, typing and reading the transcription turned out to be a challenging undertaking.

At first, as a Thai scholar from an American university conducting Doctoral research in rural Thailand, villagers saw me as an authority figure and may have felt intimidated because rural Thailand is a strong hierarchical society. However, living in the village sharing food, helping them with all their chores, and constantly being respectful, help me build a rapport with the villagers in no time. The fact that I don't have any affiliation with any Thai organizations made them comfortable to express their honest opinions and discontent with the government or other Thai institutions.

I initially thought it would take me just a little time to get accustomed to the community culture since we were all "Thai." However, it took me longer than expected since all the communities have their own sub-culture that needed to be learned. To my surprise, there were many new cultural things to learn in the field. The Southern culture, the rural culture, the small and closed community culture, the fishing community culture, the subtlety in the dialect, as well as other characteristics were all so unique and interesting to learn.

The amount of time that I spent in the field and activities that I conducted gave me an understanding of what it feels to be both an outsider and insider. I saw myself gradually transition from being an outsider to an insider during the time I spent in the field. I am not saying that I can feel as if I have gone through the same experiences as the villagers, but I understand enough to feel confident with my research results and validity, which reflects a good proportion of insider and outsider perspectives.

Dissertation Outline

This dissertation consists of six chapters. Chapter 2 describes the historical political economic background of Thailand to illustrate a series of events leading Thai state to the adoption of the Western ideas particularly with regards to the notion of state building and modernization such as conducting a cadastral survey of Thai territory, adopting a the modern land code, and creating private property system. Such events led to a major reform in Thailand particularly the creation of new bureaucratic and administrative system. After the Second World War, the USA became a new foreign patron to Thailand, which was a Southeast Asian base to fight against the Eastern Bloc. Thailand has continued to adopt the ideology of free world, economic development, neoliberalism, industrialization, and modernization, at the expense of natural resource exploitation particularly deforestation and overfishing. During this period of rapid development, many positions of "technocrats" and "experts" who were trained by Western traditions have established their legitimacy firmly. After decades of exerting the economic development policies by uncritically adopting Western knowledge, forest was clearing more than half of the country, Thai politics has been unstable, inequality has increased dramatically, societies have factionalized, and consumerism, materialism, and corruption have permeated throughout the society. Most importantly, the external costs of economic development and

resulting environmental degradation are borne by the poor and marginal groups, exacerbating their already vulnerable conditions.

Chapter 3 illustrates that, in contrary to what shrimp farming promoters claimed to increase food security to farming countries and to reduced pressure from wild-caught fisheries, it turned out that the results are quite the opposite. It describes the technical background of shrimp farming processes to illustrate how the poorly-managed shrimp farms can be very destructive to the environment, which in turn posing negative impacts on socio-economic of local communities in the areas. More importantly, the major consequence from the boom of shrimp farming is the destruction of mangrove forest both from clearing the areas for shrimp farms and from environmental pollution from farm operations. This chapter then traces how mangrove reforestation as a response to shrimp farming deforestation has come into practice from the colonial period until the present day. It illustrates that the current mangrove reforestation approach has been done by the same approach trained from same tradition since the first conception of the Royal Forestry Department (RFD). The RFD was first established from the recommendation of the British forester since the colonial period with the aim to maximize the benefits from teak timber harvest. Since such technique aims to increase the harvest without considering the ecosystem service of the forest, it is unsurprising that when similar technique is used for mangrove ecosystem restoration, the result is more devastating to resource-dependent coastal communities.

Chapter 4 briefly explains the historical background of Pak Phanang and the aftermath of the shrimp farming boom. Shrimp farming was promoted by the government to stimulate the depressed economy of Pak Phanang. However, the result is quite the opposite, leaving Pak Phanang with deforested and polluted mangrove ecosystems, bankrupted and indebted shrimp

farmers, and degraded agricultural lands. This chapter then provides historical backgrounds of Talumphuk highlighting that the tropical storm Harriet in 1962 as one of the agents bringing changes to physical landscape and social relations. It also describes current livelihood situations of various fisher groups and different issues they face, which can be concluded that most of them live with vulnerability in their every day's lives.

Chapter 5 describes the practices that transform healthy mangrove ecosystem into mono-species Big-leave Kongkang plantation in Talumphuk by the state, and how such practices affect the livelihoods of the fishers in Talumphuk. The practices were prescribed based on the "orthodoxy science" and its associated "mangrove narratives" by the "experts" without considering the suitability of local conditions. The discursive practices of mangrove reforestation are complemented with the demarcation of the mangrove plantations to territorialize the forest and control the access of resources by the state. Talumphuk, whose lives are already vulnerable, must bear with more difficulties to their livelihoods as a result of the "mangrove narratives" and discursive practices. Talumphuk fishers, who have not benefited from the shrimp farming industry, but have been disenfranchised from various types of rights to mangrove ecosystem and services from both mangrove deforestation and reforestation. More importantly, they have never been asked to participate in the decision-making processes about practices of mangrove forest, which has been the livelihood sources for Talumphuk fishers for generations.

Chapter 6 concludes the dissertation by highlighting that the environmental discourse and practices when used uncritically, can pose negative impacts to the environment and the livelihoods of the affected communities.

CHAPTER 2. THE POLITICAL ECONOMY OF THAILAND DEVELOPMENT

Introduction

Thailand has undergone a series of reforms throughout its development history under foreign influence in the form of both threats and aids. Throughout the reforms, Thailand has adopted the strategy of exploiting the country's natural resources in the name of "economic development". In this chapter I will discuss the main events in which Thailand adopted foreign ideas, policies and directions that directly or indirectly leading to the destruction of natural resources, particularly the forests.

Early Western Influence

European era.

The Bowring Treaty with Britain marked the beginning of an era of economic and administrative transformation (Kemp, 1981). The Bowring Treaty was an agreement between the United Kingdom and the Kingdom of Siam (the old name for Thailand), signed by the King Rama IV of Siam and Sir John Bowring, the Governor of Hong Kong and British's envoy on April 18, 1855 (Jhearmaneechotechai, 2011). The Bowring treaty was signed under British military threat and become the model for other subsequent unequal treaties with other imperialist states (Vandergeest & Peluso, 1995). The treaty focused on opening Siamese markets to foreign goods and exporting products from Siam, which until then had been charged with heavy royal Siamese taxes. It revoked the right of the state to monopolize export products as well as opened all of Siam's seaports to British trade. More importantly, the treaty granted extraterritoriality to British subjects (Jhearmaneechotechai, 2011; Thitibordin, 2016). The Bowring Treaty served as a blueprint for other Western powers and Japan to threaten or pressure Siam to sign similar treaties with them. For example, during the "Paknam Incident" in 1893 the French navy sent

gunboats to blockade the Chao Phraya River. The purpose of such action was to prevent the increasing influence of the British in Asia by staking its claim over the East bank of Mekong River. The blockade ended when Siam agreed to sign another unequal treaty that was beneficial to the French. From this incident, the British was afraid that the Thai and French agreement would jeopardize the British commercial interests, even though the treaty did not have significant economic impacts to the British commerce in practice. The arisen tension between the British and French led them to meet and negotiate their interests in Paris. As a result, the British and French government agreed to set Siam as the buffer state in 1893. The agreement was eventually materialized in 1896 (Thitibordin, 2016).

An immediate effect of the Bowring Treaty to Siam was the substantial loss of trade revenues and taxes. Britain, on the other hand, benefitted greatly from the treaty and took total control over timber production in Northern Thailand. The results of this were two-fold. Firstly, the feudalistic and subsistence way of production gradually gave way to capitalism. The change brought more money into the system and the villagers began to produce more for sale. The capitalist production required wage laborers, most of whom were Lao Khmu. The British also hired Burmese and Tais as contract labor, who were paid in Rupees. Thus, Thai people didn't reap much of the benefits from the change in the production system (Kuhacharoen, 1991). Since teak was one of the commodities omitted in the Bowring Treaty, Siam attempted to secure income by taking control of the teak industry, which was previously owned by the northern principalities.

Secondly, to resolve these problems and levy the taxes more systematically, the state took steps to centralize its power, incorporating the tributary states in northern, southern, and northeastern Siam into a single administrative system based in Bangkok. The reform created the

new bureaucratic system in Siam in 1892. This historically significant reform occurred during the reign of King Rama V (King Chulalongkorn). It has been recognized as one of the most successful political reform in the Southeast Asia instituted by an indigenous ruling elite (Thitibordin, 2016). Establishing the bureaucratic system resulted in a substantial increase in the government expenditure to pay for the monthly salaries. In addition, the dismantling of the corvée and military obligation in 1900, and the abolition of slavery in 1905, resulted in massive expenditure for the military salaries and labor wages (Feeny, 1989).

Being set up as a buffer state in 1893, Siam needed to have clear borders which didn't exist at that time since Siam was more concerned with local lords' loyalties and tributes than territorial boundaries (Winichakul, 1997). The Bowring Treaty turned Siam's attention to cadastral survey of the border between the Thai, British and French colonies. Consequently, the Royal Survey Department was formed in 1855 with the help from James McCarthy, an English surveyor who was already hired by the King Chulalongkorn for surveying important towns (Vandergeest & Peluso, 1995). As a result, Siam adopted the Western land code, claimed ownership of formerly "unoccupied" land, instituted administrative reforms, and Europeanized the military. More importantly, Siam transformed the concepts of space and territorial sovereignty (Vandergeest & Peluso, 1995) from "property rights in man" to "property rights in land" (Feeny, 1989).

American era.

In 1932, a revolution by the People's Party overthrew absolute monarchy and turned it into constitutional monarchy. King Prajadhipok (King Rama VII) decided to cooperate with the People's Party to prevent any violence actions. The People's Party was originally composed of seven men who met in Paris. Two of the most prominent ones were Plaek Phibunsongkhram

(Phibun), a military college student, and Pridi Banomyong, a law student that studied the French legal traditions and was the intellectual leader of the group (Baker & Phongpaichit, 2014).

After the revolution; however, things didn't turn out the way Pridi had imagined. Siam became the field for power struggle, followed by an intermittent series of military juntas that have continued to present day. More importantly, the first forty years or so after the revolution had tremendous effects in setting the stage for the future direction of Thailand. During the 1930s, the People's Party divided into two groups — the civilian and the military members — led by Pridi and Phibun respectively. Phibun was a young military officer who gradually came to dominate the People's Party. In December 1938, Phibun became a prime minister and also appointed himself head of the army and minister of defense, interior, and foreign affairs (Baker & Phongpaichit, 2014). Phibun's regime was driven by a nationalism ideology. On June 24, 1939, he changed the country's name from Siam to Thailand. His economic nationalist policies included establishing many state enterprises and government-owned companies such as the Thai Rice Company (1938), the Thai Produce Trade Company (1939), and the Thai Shipping Company (1939). Such enterprises and companies were controlled and managed by a group that supported Phibun, and the profits sustained the power of Phibun for many years. In addition, the members of the Phibun government individually established their own companies using the power they had. During this time, Thailand exported a lot of rice to Singapore, China, Britain, and Japan, and exported rubber and tin to Britain (Kanklew, 1985).

Post WWII Development

Growth oriented development and modernization.

After the Second World War (WWII), the U.S. became a new foreign patron that turned Thailand into a Southeast Asian base in the fight against the Eastern Bloc. In doing so, the U.S.

needed to strengthened Thai military and gave large sums of money to both the military and the police. To ensure Thailand's position as a key player in the "free world" camp during the Cold War, the U.S. promoted the ideology of "development," which primarily supporting economic growth through private capitalism. Enormous aids from the U.S. had poured into the Thai military, accounting for two and a half times of the budget of Thai military in 1953. As a result, an Army Chief Sarit Thanarat rose to the power and eventually executed a coup on 18 September 1957, sending Phibun into exile. Sarit's military junta continued to get massive financial aid from the U.S. In the 1960s, the U.S. military aid increased four-fold, reaching its highest amount of USD 123 million in 1972 (Baker & Phongpaichit, 2014). In addition to financial support, the U.S. and other U.S.-backed organizations such as the World Bank and the Food and Agriculture Organization of the United Nations (FAO) sent many "experts" to conduct numerous studies to "understand" more about Thailand, resulting in many reports and recommendations which later became the blueprint for a number of Thai policies.

President Truman introduced the word "development" in his inaugural speech in 1947, which was adopted by Sarit as a key concept in hope for becoming a powerful nation-state (Baker & Phongpaichit, 2014). The Thai word *phattana* translated from "development," has become a watchword that is commonly heard in Thailand until present. Sarit used the development ideology in his regime and expressed that the important task was to make Thailand "progressive" and "civilized." The U.S. and the World Bank also helped setting up and running new bureaucratic infrastructure for promoting development agenda. In this era, many senior officials were sent to the U.S. for training, creating a new generation of technocrats. Between 1951 and 1985, around 1,500 students and scholars went to the United States on the Fulbright or

similar grants. By the early 1980s, the number of Thai students attending U.S. higher education institutions rose to around 7,000 (Baker & Phongpaichit, 2014).

In 1957, the International Bank for Reconstruction and Development (now the World Bank) sent a group of experts to study the state of Thailand's economy. As a result, they published the recommendation report "A Public Development Program for Thailand 1959," for Thai National Economic Council (NEC). The report was later turned into Thailand's first five-year National Economic and Social Development Plan (NESDP), which launched in 1960. The NESDP has been renewed every five years and has been used as a blueprint for prescribing Thai policies. The primary objective of the early economic plans included in the 1st NESDP was to intensify the exploitation of Thailand's natural resources and to facilitate foreign investment (Baker & Phongpaichit, 2014).

In an attempt to accelerate the development of the economy and industry, the government encouraged private investment by providing tax incentives to investors, establishing the Board of Investment (BOI) in 1959, and controlling labor unions. Sarit also controlled the role of state enterprises, whose beneficiaries were his political opponents, so they could not compete with private businesses. Sarit's policies created major changes in Thai economic structure and brought about the vast increase in multi-national corporations from Europe, U.S. and Japan. Between 1957 and 1972, there were 114 multinational corporations invested in Thailand. Of these corporations, 85 were from the U.S. and 22 from Japan.

Meanwhile, Thai capital groups also expanded rapidly, particularly in the import-substitution sector, financial sector, and agro-industry sector. Of all the capital groups, 70 of them were Thai-Chinese. By the mid-1970s, the Thai agro-business grew to form conglomerates – Agri-business groups (AGRs) – that focused on an export-oriented industry of agricultural

crops and materials such as rice and cassava roots, replacing the previous import-substitution business. These groups included Charoen Pokphand (CP), Metro, and Kaset Rungruang (Soonhuaseng) (Kuhacharoen, 1991).

Between the 1950s to 1960s, the gap between rural poor and urban rich had increased dramatically. The politics had increasingly become what Fred Riggs (1966) called "bureaucratic polity," in which government officials established bases of their power with their minorities and subordinates, as well as exchanged business benefits with investors. At the same time, the dominant ruling party did not allow other groups such as other political parties or business groups to participate in policymaking processes (Kuhacharoen, 1991; Riggs, 1966).

Major changes in the rural landscape and rural societies began when the Communist Suppression Operations Command was set up in 1964 with the support from the U.S. to coordinate counterinsurgency. This was later renamed as the Internal Security Operations Command (ISOC). The campaign concocted by the military depicted any groups advocating different views of political or social change as "communists." In turn, the "communists" were portrayed as something representing 'traitors,' or the 'enemies of nation, religion, and king.' Consequently, the communists were often punished with violence. This campaign eventually led to the massacre on October 6, 1974 when 43 student protesters and activists gathering in Thammasat University were killed by the military. Around 8,000 students were arrested, and many more fled the city to join the communist rebel camps in the jungle (Baker & Phongpaichit, 2014).

With the communist rebels taking over the jungles all over the country since the mid-1960s, the government initiated a parallel campaign of "rapid rural development projects." The actual aim was to eliminate areas where communist rebels could hide or shelter in the guise of

"development" agenda. Prior to this initiative, most areas beyond the river valleys were still covered by forests, which were perceived as savage and disease-ridden areas. Malaria is literally translated as "Forest Fever" in Thai. The malaria eradication program in the 1950s opened up the frontier of upland forests, prompting the communist rebels to recede further into the jungle. The Thai government later built military roads into the forests and allowed a number of logging concessions to clear forest areas. Between 1969 and 1979, 516 timber concessions were granted covering nearly half the country's land area (Lohmann, 1993). In the mid-1970s, the forest was disappearing at a rate of about 96,000 ha per year (Baker & Phongpaichit, 2014).

The ISOC also worked at the village level. The Border Patrol Police founded the "Village Scout Movement" in 1971 with the main purpose of fighting against communism through rural propaganda. The Village Scouts were trained in camps to listen to nationalist speeches, singing patriotic songs, participate in pledging rituals, and play team games to create a sense of unity and national identity. Upon graduating from the training, the participants received a neck scarf and pins or a certificate symbolically from the king or royal family members (Baker & Phongpaichit, 2014). This type of activity has been a model for organizing rural propaganda up to the present, as I will discuss later using my participation on the "Volunteer Mangrove Protector Training" as an example.

During this period, both foreign and local capitals expanded their investment with the support from the government, forming a tripartite agreement among the government, local capital, and foreign capital (Kuhacharoen, 1991). Although this created economic growth, a number of problems stemming from this period have plagued Thailand until today, particularly from Sarit's and Thanom's military regime. Sarit, Thanom, and their entourages – the Generals – set the trends that profoundly affected future generations with the proliferation of corruption,

local mafias, gangsters, and the sex industry. As the Generals oversaw the massive inflow of U.S. dollars to government budgets, they also benefited their private businesses. They set up companies to supply goods and services to government agencies, took cuts on arms purchases, exploited natural resources especially by logging, took possession of land along the newly constructed roads, patronized major businesses in return for shares and directorships, took over executive posts in state enterprises, legalized old-fashioned male privileges, and encouraged the habits of exploiting political power for personal gain. Following Sarit's death, the assets he accumulated while being a prime minister were estimated at THB 2.8 billion, which accounted for around 30 per cent of the total budget of the country during that period (Baker & Phongpaichit, 2014).

The behaviors of the Generals were replicated and spread to other levels of society. "Strongmen" figures emerged as the market economy grew without a strong rule of law. Local government officials and middlemen turned moneylenders became the local mafia. An important post – Kamnan – the head of a group of village chiefs, became central in the networks of commerce and officialdom (Baker & Phongpaichit, 2014). Many Kamnans and their entourages set up their own businesses to provide goods and services for government agencies. They also sought large-scale projects in order to obtain cuts and revenues from government budgets. They combined their commercial and official power to further profit from illegal businesses and in registering excessive land titles. Since Kamnans and local politicians have become powerful, fierce competition for the posts has created social factions. Coupled with the increasing market economy at the village level, communal practices of labor exchange were degraded, and replaced with individualism.

At the end of the wars in Indochina, the U.S. troops left Thailand in 1975 – 1976, leaving behind a Thai army that had become corrupted, politicized, and factionalized by fighting over the power and policy directions. Thailand began to reestablish the relationship with China. General Prem Tinsulanond became a prime minister in 1980 and continued the rural development scheme, this time with the support from the United States Agency for International Development (USAID). Eventually, the army offered amnesty to the communist rebels. As a result, most students returned from the jungle between 1979 and 1981, followed by the rebel armed units who surrendered between 1982 and 1983. The rest were arrested in 1987, which marked the end of the people's war and the Cold War era in Thailand (Baker & Phongpaichit, 2014).

In 1988, after a long period of military dictatorship and semi-democracy, Chatichai Choonhavan was appointed as prime minister after his Thai Nation Party won the election. His government started to re-establish the broken relationships with the countries that were considered to be the enemies during the Cold War, such as Cambodia, Laos, Vietnam, and especially China. Chatichai's most prominent slogan was to turn Indochina "from a battlefield to a marketplace." Chatichai's government initiated many infrastructural development projects such as the Telephone Organization of Thailand (TOT) and the Eastern Seaboard of Thailand, and continued with industrialization and development agenda (Lauridsen, 1998).

The Fifth Asian Tiger?

Thailand started its industrialization during Sarit's government with the focus on import-substitute industrialization (ISI), supported by the World Bank and the U.S. as part of the "development" regime. The 1940s and 1950s saw the emergence of the domestic capitalist class with strong links to the military. The 1960s and 1970s was marked by the rise of finance capitalists and bankers, also linked to the military leaders. In the 1970s, Thailand was among the

fastest growing and most successful developing countries in the world, with an average GDP annual growth rate of 7% or more each year. Building on this success, technocrats envisioned a strategic change from import-substitute industrialization (ISI) to export-oriented industrialization (EOI). The reform was initially resisted by domestic capitalists, but the economic decline in the mid-1980s allowed for the EOI initiatives to proceed (Hewison, 1999).

During the early 1980s, Thailand's single largest import was oil. The second oil crisis of 1980 – 1981 resulted in a collapse of the agricultural and fisheries sectors in Thailand. Despite with the government response by promoting tourism and exporting labor to the booming Middle East particularly Saudi Arabia, the economy still plummeted between 1983 – 1984 resulting in widespread bankruptcy, investment withdrawal, and unemployment. The International Monetary Fund (IMF) was called in to implement stabilization and structural adjustment programs. Technocrats took this opportunity to switch from import substitution to export promotion by implementing various means including reducing non-tariff barriers, decreasing the import surtax, deregulating the industries to promote investment, and most notably devaluing and pegging the Thai currency to THB 25 per one USD in 1984 (Baker & Phongpaichit, 2014; Hewison, 1999). The devaluation of the Thai baht made Thailand more attractive for manufacturers from Japan and the East Asian Newly Industrialized Countries (NICs) (Hewison, 1999). Manufactured exports increased from 1% of total exports in 1960 to 80% by the mid-1990s. During 1984 – 1989, the average exports increased by 24% per year, mainly consisting of labor-intensive products such as garments and toys. From 1988, many East Asian firms moved their export-oriented manufacturing to Thailand, including technology-based products and automotive (Baker & Phongpaichit, 2014). By 1986, Japan became the main investor, with a 9 times increase

in the level of net inflows between 1987 and 1990 (Hewison, 1999). Between 1993 and 1996, one new Japanese factory opened in Thailand every three days (Baker & Phongpaichit, 2014).

From the late 1980s, Thailand was one of the fastest growing economies in the world. Its economic success gave Thai government a dream of becoming the "Fifth Asian Tiger." The Four Asian Tigers, or the Asian NICs, include the super-performing-economies of Hong Kong, Singapore, South Korea, and Taiwan (Muscat, 2016). Thailand was praised as part of the "East Asian Miracle" along with Hong Kong, Indonesia, Japan, South Korea, Malaysia, Singapore, Taiwan (Stiglitz, 1996).

Neoliberal Era

The Asian financial crisis.

The 1997 Asian Financial Crisis transpired from a complicated string of events, the causes of which have been discussed by many scholars and are beyond the scope of this dissertation. Here I will touch these issues briefly to contextualize my research.

In mid-1997, something went very wrong with Thailand's success story. The real estate over-investment and speculation, enormous external debts and the recession in Japan, were amongst the many events that led to the depletion of Thai official reserves from about USD 38 billion to just USD 2.8 billion by July 2, 1997, resulting in the float of Thai baht value. In August 1997, Thailand had to turn to the IMF for rescue leading to one of the largest bailouts in Thai's history. IMF agreed to provide a loan of USD 17.2 billion to rebuild the foreign reserves with several conditions. These conditions required the Thai government to adopt austerity programs and financial restructuring plans to loosen restrictions for foreign investors, to end the subsidies to state companies, to cut fiscal spending, and to increase the national value-added tax from 7%

to 10%. In addition, Thailand received USD 2.7 billion from the World Bank and the Asian Development Bank to be used as a "safety net" to restore industrial competitiveness, improve capital markets and mitigate social problems arising from the austerity program (Lauridsen, 1998).

The manufacturing industries were affected differently across the sectors. The lower value of the baht made Thai exports more competitive while the cost of imported components and raw materials went up. Therefore, the "sunrise" industries such as computer, electronic, and automotive industries that relied on imported materials were badly affected. In contrast, the "sunset" industries, or the traditional export industries such as textiles, garments, paper, footwear, and food products benefited from the devaluation of Thai baht. For the general public, the higher inflation and unemployment affected their living standard. It was estimated that the collapse of the manufacturing industries, construction, real estate and financial sectors, and small businesses caused around one million people to lose their jobs. The rural areas were also affected by the decline in the flow of remittances from relatives who had lost their jobs (Lauridsen, 1998). This crisis shattered the Thai government's dream of becoming the fifth Asian Tiger.

Thaksinomics.

Although Thailand has been integrated into the global economy since the Sarit – American era of the 1960s, the conditions imposed by the IMF after the crisis forced Thailand to fully adopt the political and economic ideology of neoliberalism. The IMF and the World Bank imposed neoliberal policies at the international level including free trade of goods and services, free circulation of capital, and freedom of investment. The implication of these policies is to reduce the state's role in the economy and to grant an almost total freedom to corporations (George, 1999).

Chuan Leekpai stepped in as a prime minister during the peak of the crisis and eventually helped stabilized Thailand's economy; however, he was attacked by many opponents as being an IMF's favorite child. Ironically, many of Chuan's opponents later became the primary supporters of Thaksin Chinawat. In 2001, Thaksin became the prime minister, whose policies were even more liberal than ever before in Thailand (Khoo, 2010).

Thaksin's administration was marked by policy bifurcation. At one end, there were numerous populist measures for the poor particularly the rural Northeast region – the largest electoral bases in Thailand. His most notable populist policies were the provision of THB 1 million soft loan per village as well as the universal health care for THB 30. At another end, the policies aimed to resurrect domestic capital from the crisis. After the economy recovered, Thaksin proceeded to privatize the energy, water, transportation and telecommunications sectors, as well as liberalize and deregulate selected sectors that were particularly beneficial to the Thaksin family's corporate assets. Thaksin's regime was considered "crony capitalism" (Khoo, 2010).

Despite the rural support for his populist policies; the urban middle-class and labor unions, amongst other groups turned against Thaksin, particularly on his many corruption charges. Eventually, the rampant battle between the "Yellow Shirts" (Thaksin's opponents) and the "Red Shirts" (Thaksin's supporters), ensued and led to the military coup in September 2006. After a period of political turmoil and widespread conflicts, Thailand was ruled by Thaksin's puppet government alternating with military government until today. The conflicts left Thailand extremely fractionalized. Although the growth rate during his premiership was high, rising from 1.9% in 2001 to 5.3% in 2002, and to 6.5% in 2003 (Looney, 2003), most profits fell into the hands of a few groups of capitalists associated with Thaksin's family and his entourage.

Meanwhile the gap between the rich and the poor continues to grow wider until present. In many cases, money that rural poor borrowed from Thaksin's populist scheme was used to buy luxury commodities like flat-screen TVs, gold jewelry, and new pick-up trucks, resulting in the overwhelming amount of debts among the rural poor.

After decades of hegemonizing ideologies of "development" and "neoliberalism," Thailand is ranked third in 2016 and first in 2018 as the country with the largest gap between the rich and the poor in the world. The data show that in 2018, the 1% of the population controls 66.9% of the national wealth, increased from 58% in 2016 (The Bangkok Post, 2018). The political-turned-social fractionalization has permeated every units in the societies. The rural poor now enjoy modern luxurious commodities and lifestyles and become dependent on free money and loans. At the same time, debt among farmers and the poor has skyrocketed. A survey from Kasetsart University in 2017 found that 40% of farmers lives under the poverty line; 30% of farming households have debt above the average annual income; and 10% have debt three times higher than the average annual income (Banchongduang, 2018).

Conclusion

This chapter traces the historical background of Thailand political economic development and associated policies on natural resource use. It argues that Thai state, throughout its modern history, has aimed toward various forms of "development" at the expense of natural resource exploitation and marginalization of the poor. Although the "development" discourse has transformed its face from "economic development" to "sustainable development," the state's motive of controlling its (in this case, internal) territories and access to resources remains unchanged. By doing so, the state has mobilized numerous plans and projects by creating the conviction in forms of narrative and discourse, along with the position of an "expert." As a

consequence, Thailand's natural resources have been degraded and depleted dramatically, communities are factionalized, and the gap between the rich and the poor has increased exponentially. More importantly, the poor and the marginal group are the ones who pay the highest prices particularly by being disenfranchised from their multitude of rights.

CHAPTER 3. SHRIMP FARMING AND MANGROVE FORESTRY IN THAILAND

After decades of exhausting its resources, waves of foreign influences led Thailand to adopt a series of resource policies in the name of "natural resource conservation, environmental management, and sustainable development." Nonetheless, the seemingly divergent prescriptions to different problems turned out to yield the same result which leads to further marginalization of the poor. Continuing from chapter 2, I will elaborate on how Thailand, in the name of "economic development," adopted intensive shrimp farming as one of the strategies. Then I will discuss the environmental and socio-economic consequences of intensive shrimp farming, including its destructive impacts on mangrove ecosystems. To respond to the mangrove destruction, the government took a variety of measures that have ironically led to the devastation of local livelihoods. In order to understand the government's contradictory actions, I will trace the ways "scientific knowledge" and practices were constructed at the first place. This research found that knowledge system used by the responsible government unit could be traced back as far as the colonial period, when the main goal of forestry was for timber harvest.

Intensive Shrimp Farming

"Blue revolution"

Dubbed as the "Blue Revolution," which was compared to the "Green Revolution," intensive shrimp farming was promoted by many international organizations, financial institutions, and donor agencies such as the Food and Agriculture Organization of the United Nations (FAO), the World Bank, and Asian Development Bank (ADB), as well as national governments based on various rationales. Firstly, shrimp farming could reduce the pressure on wild marine stock that has been declining after decades of overfishing. Secondly, shrimp farming could provide high-quality animal protein that would increase the global food supply. Thirdly, it

could increase incomes and local employment opportunities, as well as broaden the economic base in rural areas. Most importantly, it could be a vehicle for economic development as it would increase export earnings for the third world countries that would eventually trickle down to the poor (SolidarityCenter, 2008; Stonich, 2002; Stonich & Bailey, 2000).

Globally, modern shrimp farming got its first breakthrough in 1934 as Dr. Motosaku Fujinaga successfully completed the life cycle of Penaeid shrimp in captivity in Japan. Over the following two decades, Dr. Fujinaga continued to develop the techniques for shrimp farming, which became a "springboard" for the development of the world shrimp farming (Chamberlain, 2010). The second wave of shrimp farming development started in the 1960s when the shrimp farming techniques from Japan were transferred to other countries, in particular the United States and Taiwan. In Taiwan, the effort was spearheaded by Dr. I Chiu Liao, a former director general of Taiwan Fisheries Research Institute who worked as postdoctoral fellow with Dr. Fujinaga in Japan in 1968. He later pioneered the intensive farming method of *Penaeus monodon* in Asia, leading to the rapid development of commercial farms. In the 1970s, shrimp farming knowledge and technology was disseminated globally by organizations such as Sea Grant and the World Aquaculture Society (formerly the World Mariculture Society) in the U.S., the Tungkang Marine Laboratory in Taiwan, the Southeast Asian Fisheries Development Center (SEAFDEC) in the Philippines, and the Food and Agriculture Organization of the United Nations (FAO) in Italy (Chamberlain, 2010).

By 2002, shrimp aquaculture industry has created 1.2 - 1.5 million jobs worldwide (EJF, 2003). In Thailand, shrimp farming is lucrative and could earn 30 times more revenue than rice farming (EJF, 2003). In 1998, there were approximately 15,800 registered shrimp farmers who each employed at least one laborer in their farm. Therefore, shrimp farming directly created

around 32,000 jobs (Somsak Boromthanarat & Nissapa, 2000). Shrimp farming also created other employment opportunities through associated service industries such as shrimp processing factories, hatcheries, feed production, transportation, cold storage, middle men, feed and chemical retail, pond construction; as well as associated products such as aerators, containers, water pumps, and various kinds of chemicals used in the process (Jenkins, Smith, Tookwinas, & Phillips, 1999). It was estimated that associated industries created the employment of more than 200,000 people. In 1998, a total of 300,000 people worked in shrimp farming industry in Thailand (Somsak Boromthanarat & Nissapa, 2000). Shrimp farming brought with it other infrastructures and constructions in the surrounding areas including road expansions, electricity and water supplies, and telephone and communications networks (Jenkins, et al., 1999).

Despite the potential success of shrimp farming, the results after decades of being promoted by the Thai government, international financial institutions, and corporations did not always meet the expectations. The high profits from shrimp farms were largely confined to a small group of investors and rarely or never trickled down to local workers or surrounding communities (EJF, 2003). Globally, 99% of shrimp farms are in third world countries; however, most shrimp products are exported to first world countries particularly the U.S., Japan, and Europe. This means that the expectation to increase affordable nutritious protein supply for the poor is not realistic (Stonich & Bailey, 2000). Not only can it not live up to the expectation of ending world hunger and compensating for the declining capture fish stocks, shrimp farming also creates numerous negative social and ecological consequences. More importantly, it has imposed externalities on people in shrimp farming areas – some of whom are the poorest, most marginalized, and most vulnerable group in Thailand (EJF, 2003).

Environmental and social impacts.

Intensive shrimp farming begins with digging and dredging for pond construction and water preparation, usually in mangrove forests. Mangrove forests used to be considered as wastelands and thus were easily obtained in comparison to acquiring higher-cost coastal properties elsewhere. Therefore, most pond construction involved clearing large tracts of mangrove forests (KM, 2018). The construction of dikes and drainages for seawater intake and wastewater discharge into nearby natural canals or coastal water can alter geomorphological and hydrological characteristics of surrounding areas.

Farm-raised shrimps grow best in brackish water. After the pond is ready, seawater from nearby sea is pumped into the pond to be mixed with large volume of freshwater from nearby reservoirs or groundwater. During the pond preparation process, numerous kinds of fertilizers are added to achieve the optimal amount of phytoplankton necessary to nurse shrimp larvae. Most intensive shrimp farmers buy shrimp seeds from hatcheries for stocking. Intensive shrimp farming requires a high stocking density and intensive management of the pond environment around the clock**.** During the grow-out period, poor management could cause the pond water and pond floor to accumulate organic material from shrimp waste, uneaten feed, fertilizers, antibiotics, minerals, and possibly ammonia and hydrogen sulfide from anaerobic bacterial decomposition (Funge-Smith & Briggs, 1998).

One important factor in shrimp farming is disease prevention. Healthy shrimps are normally capable of fighting against disease. Thus, such factors as good water quality and low stocking densities are critical (Rosenberry, 1988). Infectious pathogens can include viruses (e.g., White spot syndrome virus, Taura syndrome virus, and Yellow head virus), bacteria (e.g., *Vibiosis*), or protozoa (e.g., *Zootannium sp., Epistylis sp.*) (KM, 2018). Hatcheries are also

susceptible to diseases since they maintain high densities of live feeds and larvae stocks. Hatcheries bring in new batches of wild broodstock which may already carry pathogens with them (Rosenberry, 1988). In 1988, the Taiwanese shrimp industry was struck by an outbreak of Monodon Baculovirus (MBV) disease, which caused a large-scale production crash in the country. The industry has never fully recovered since then (SolidarityCenter, 2008). In Thailand, diseases wiped out around 90% of shrimp farms along the Inner Gulf of Thailand in 1990. After many farms migrated to southern Thailand, disease struck again in 1996, causing a production crash in the southern region (Bluffstone, Anantanasuwong, & Ruzicka, 2006). Although shrimp farmers and hatcheries may be able to fight against protozoa, fungi, and bacteria, the most devastating diseases which they can't defend against are from viruses. Viral diseases have caused major crashes in many countries including Thailand. Although there is no treatment for virus infections when it occurs, good management practices and techniques can prevent or lessen its impacts (Rosenberry, 1988).

Intensive shrimp farms use large amount of chemicals to treat the water, soil, and shrimps. The examples of such chemicals include fertilizers, liming material, feed additives, therapeutants, disinfectants, antibiotics, algaecides, herbicides, and probiotics (Gräslund & Bengtsson, 2001; J. H. Primavera, 2006). Thai shrimp farms use large amounts of insecticides, such as trichlorfon (Dipterex), to kill disease vectors. When the chemical residue is discharged into canals or coastal waters, it can pose harmful effects on aquatic animals as well as to human when consume the contaminated seafood (Gräslund & Bengtsson, 2001).

Technically, shrimp farms should have treatment ponds set aside from the growout ponds to treat wastewater and bottom sludge prior to discharge into the natural water bodies. However, many intensive shrimp farmers, particularly small-scale farm owners commonly found in

Thailand, do not want to set aside their already limited land as treatment ponds. As a result, they discharge wastewater directly from the growout ponds without treatment. Untreated effluent discharged from shrimp ponds contain substantial amounts of nutrients and waste products such as uneaten feed, fecal matters, dead algae, and plankton. When large numbers of intensive shrimp ponds clustered in close proximity, their effluent discharge can exceed the carrying capacity of receiving water body, resulting in the degradation of the environment and aquatic ecosystems (Rosenberry, 1988).

Most coastal shrimp farms in question are located in the areas where local villagers used to have shared customary rights such as access to mangrove forests or beach areas. Some villagers rely on such access for their livelihoods as in the case of Talumphuk villagers where many draw their income from collecting mud crabs or mud mussels. Others rely on having access to the beach to go out fishing in the open sea. Building shrimp ponds in such areas has transformed common property available for communal users including the poor into private property that only benefits shrimp farmers. The privatization has deprived many people of their access to their fishing grounds or to the beach where they need to go out fishing (Lindberg & Nylander, 2001; Naylor et al., 2000; Stonich & Bailey, 2000). This has been referred to as a 'tragedy of enclosures' (EJF, 2003). Consequently, fishers have to make farther trips, thus spending more of their already scant budget on fuel and labor, just to get enough catch to sustain their livelihoods. This is the case for Talumphuk villagers as I will explain more in chapter 4 and 5.

Shrimp farming practices can cause saltwater intrusion and pollute nearby agricultural land, rendering poor landowners to have few options except to sell their land to shrimp farm investors. Therefore, many areas that once were previously productive agricultural land are now

either abandoned or being used for shrimp farming. In Thailand, it was estimated that nearly 50% of shrimp farms used to be rice fields (EJF, 2003; Jurgenne H Primavera, 1997). As with many Asian countries, the staple food in Thailand is rice. Shrimp farms reduced the area to grow rice, thus reducing the rice production both by replacing rice paddies with shrimp ponds and by degrading former agricultural lands due to the salinization of soil and groundwater or other forms of pollutions associated with shrimp farm operations. This situation also reduces the available local agricultural products, necessitating local to buy lower quality produce at higher prices. Therefore, in addition to the failure to live up to the expectation of an affordable protein source for the poor, shrimp farming jeopardizes the food security within the shrimp farm countries.

In contrast to the claims that aquaculture can mitigate the declining capture fish stocks, shrimp farming is one of the culprits for the decline of wild stocks (EJF, 2003). Shrimp farming in Southeast Asia relies on wild shrimp for the seed stock, which requires capturing gravid females. Wild Black Tiger shrimps are rare and comprise in very small proportion of wild stock populations (Lindberg & Nylander, 2001). As an example, the wild caught adult Black Tiger shrimp make up of only 0.1-0.9% of the total recorded trawl landings in Southeast Asia in 2001; 0.06% in Malaysia in 1994; and 0.14% in Indonesia in 1996 (J. H. Primavera, 2006; Rönnbäck, 2001). Since shrimps in nature are hard to find and the demand for wild-caught seedstock and broodstock has increased substantially, this leads to overfishing not only of shrimp seed and broodstock, but also of other non-target species as bycatch (Lindberg & Nylander, 2001). Studies in Malaysia and the Philippines show that for each fry of black tiger shrimp that was caught, about 330 - 475 other shrimp fry was also caught with it. With the development of hatcheries in Thailand, most shrimp farms no longer rely on wild seedstock. However, the demand for wild broodstock for the hatcheries remains high (J. H. Primavera, 2006).

Intensive shrimp farming requires a lot of supplemental feed. The pelleted feed consists mainly of fishmeal and fish oil, which are derived from wild caught fish. This puts even more pressure on the already declining wild fish stocks. As a carnivorous species, shrimps require double their own weight in protein from feed (EJF, 2003). In 1994, around 2.5 million tons of fish and other fish products were used to produce around 1 million tons of feed for intensive shrimp farming. This means that around 10% of global fish landings were turned into fish meal and fish oil for the shrimp farming industry. Furthermore, the amount of nutrients that actually assimilated into shrimp biomass is only a small portion of the total amount of nutrients in feed given to cultured shrimp. Funge-Smith and Briggs found that only 18-27% of nitrogen and 6-11% of carbon from the feed applied to the pond was assimilated by the shrimps. The rest was either absorbed into plankton biomass, evaporated, or settled into the sediments (Funge-Smith & Briggs, 1998). With the decline in wild capture fish stocks to produce feed, the feed prices have been increased, which has increased shrimp production costs (Beveridge, Phillips, & Macintosh, 1997). Prior to the shrimp farming boom, small sized fish catches were either consumed by fishing households or sold at low price in local market. However, as feed price became increasingly high, not only has trawl fishing moved down the food chain to smaller fish, but the bycatch is now sold to the shrimp feed industry. In Thailand, 70% of trawler landings are trash fish, only suitable for animal feed (Lindberg & Nylander, 2001). Seafood has been a major dietary protein source for most coastal communities in developing countries. A decline in wildstock aquatic animals has reduced the accessible protein source for coastal communities. Marginal groups who rely on catching fish for consumption, now have to spend more time, energy, and fuel to catch the scarce resources. This may increase competition and reduce the traditional social ties. More importantly, they can't even afford to eat the fish they catch. They

have to sell the fish to buy cheaper, non-nutritious food such as instant noodles, which results in the deterioration of their health. As for the poor non-fishers, there is no more affordable seafood for them to buy in their local markets.

Shrimp farming in Thailand.

Following the decline in the salt prices after the WWII, the Thai government monopolize salt export in 1947. Consequently, many salt farmers in the Inner Gulf of Thailand, mainly in Samut Sakhon, Samut Songkram and Samut Prakarn, converted their salt farms into shrimp farms. Shrimp farming has been practiced in Thailand since as far back as the 1930s, although they were not as "actively managed" (Patamasiriwat, Bennis, & Pednekar, 1996; Szuster, 2006). This practice, referred to as "extensive farm" or "traditional farm," was only practiced during dry seasons in the coastal lowland rice paddies around the Inner Gulf of Thailand. Traditional shrimp farmers would flood their land with the tidal flow, bringing with it shrimp seeds as well as naturally occurring nutrients and food. These were trapped until they were ready to be harvested (Flaherty & Karnjanakesorn, 1995; Szuster, 2006). The tidal action also allowed water exchange which kept the pond clean and continued to bring in nutrients and food into the ponds. Shrimp species that were cultured included Banana shrimp (*Penaeus merguiensis*) and School shrimp (*Metapenaeus Monoceros*) (Patamasiriwat, et al., 1996; Szuster, 2006). Extensive shrimp farms require a large area and have to be located near the coast or on the canal banks to get the tidal flow, or be convenient to pump water into the ponds (Aksornkoae & Tokrisna, 2004). In the late 1960s, the number of extensive shrimp farms increased rapidly due to an increase in shrimp prices and higher profits relative to salt farms.

In Thailand, the Department of Fisheries (DOF) began to promote semi-intensive monoculture shrimp farming techniques and successfully established the hatcheries to rear Black

Tiger shrimp seed (*P. monodon*) postlarvae in 1973. Semi-intensive shrimp farming provides two to three times higher yields than extensive farming. Black tiger shrimp became the focus of semi-intensive farming during this period because of its high export value, high growth rate under the domestic culture conditions, and high demand from the oversea market, particularly Japan (Flaherty & Karnjanakesorn, 1995; Patamasiriwat, et al., 1996; Szuster, 2006).

Consequently, the DOF promoted the intensive shrimp farming to meet higher demand for exports. Because of the higher stocking density and subsequent higher maintenance, intensive shrimp farming requires access to capital resources for the construction of channels for water supply and drainage, mud dike ponds, gates, and supporting facilities such as storage and refrigeration units. It also requires supplementary feeding, fertilizers, mechanical aerations, and a daily water exchange (Flaherty & Karnjanakesorn, 1995). At first, intensive shrimp farming attracted only small groups of investors who had access to capital investment. After a decade, it began to take-off and attracted more small-scale farmers due to its attractive high returns and the decline in wild-caught fishery products (Flaherty & Karnjanakesorn, 1995). One reason for the decline was the increase in oil prices during the 1970s that resulted in an enormous loss to Thai fishery profits in 1973 (Wisansuwannakorn, 2006). Another reason was the promulgation of the established Exclusive Economic Zones (EEZ) in 1981 that caused Thailand to lose about 768,000 km^2 of its fishing grounds (Vandergeest, Flaherty, & Miller, 1999). The massive decline in wild-caught fishery products in Thailand, coupled with an increase in shrimp demand and prices from Japan, the U.S. and other Western European countries led the Thai government to actively promote semi-intensive and intensive marine shrimp farming industry (Flaherty & Karnjanakesorn, 1995).

In the 1980s, production from intensive shrimp farming became one of the major export products of Thailand, for a number of reasons. First, the shrimp farming industry was heavily supported by the Department of Fisheries (DOF) and other international financial organizations, providing research and extension services, construction of infrastructure in coastal areas that included roads and canals, as well as financial support to farmers (Szuster, 2006). Second, there was a high return from higher export prices of Black Tiger shrimp. Third, the crash of the Taiwanese shrimp industry due to widespread disease outbreak caused by Monodon Baculovirus (MBV) in 1987 – 1990. Fourth, a decline in shrimp catches from wild stocks (Somsak Boromthanarat & Nissapa, 2000). Fifth, the transference of technology from Taiwan to cultivate intensive farming on a large scale, coupled with the training of Thai personnel in Japan, allowed for Thailand to develop better technology for intensive culture farming. This included post-larvae rearing and high-quality artificial feed production. The last and most important reason was the interest and investment of large domestic corporations, particularly the Charoen Pokphand group (CP), a Thai agro-industrial conglomerate. CP was the world's fifth largest producer of animal feed in 1990 (Niemeier, 1990), and became the first in 2016 (WATTAgNet.com).

Thailand's shrimp farming industry became the fastest growing in Southeast Asia. By 1988, the shrimp harvest increased to 55,000 metric tons, up from 13,000 metric tons in 1984, or a 320% increase. In 1985, Thailand had only one shrimp feed mill, but by 1988 it had increased to 15 mills (Niemeier, 1990). Additionally, there was a widespread intensification of shrimp farming, and by 1994, 80% of the shrimp farms in Thailand were intensive (Dierberg and Kiattisimkul, 1996). Production is dominated by *Penaeus monodon*, which accounts for around 90% of cultured tiger shrimp, followed by *P. merguien*sis and *P. indicus* accounting for around 5% each (Huitric, Folke, & Kautsky, 2002).

Unfortunately, just like in Taiwan, intensive shrimp farming in the Inner Gulf region also suffered from disease outbreak that led to a production crash in 1990. The outbreaks resulted not only from self-polluted poor water quality management in shrimp farms, but also from receiving wastewater from urban, industrial, and agricultural effluents that were carried by major river systems such as Chao Phraya and Mae Khlong, and poor water circulation in the Gulf of Thailand. The 1990 production crash bankrupted about 90% of shrimp farmers in the region and about 45,000 ha of shrimp farms abandoned (Patmasiriwat, 1999).

In addition to the production crash, during 1989 - 1990, gate prices of shrimp farms fell dramatically due to various factors. Firstly, the expansion and increase in the production of shrimp farms in other countries in Southeast Asia resulted in an increase in global shrimp supplies. Secondly, the passing of Emperor Hirohito in 1989 led to a reduced consumer market in Japan (Briggs 1994). To stimulate the shrimp farming industry, the Thai government responded by granting a temporary tax break on imported fish meal that is used for feed industry, thereby lowering the production cost of shrimp farming. Additionally, Thailand's Board of Investment (BOI) promoted the construction of new cold-storage and processing facilities (Patmasiriwat, 1999).

Unlike in Taiwan where the shrimp farming industry was concentrated in one area and had little room for expansion, Thailand's shrimp farming industry was able to move to the other parts of Thailand, such as the eastern part of the Gulf, including Nakhon Si Thammarat, Songkhla and Surat Thani in southern Thailand (Vandergeest, et al., 1999). In 1985, the first large company to pioneer shrimp farming in the south was Aquastar, an American owned consortium. Initially, Aquastar operated their own farms but later they moved towards contract farming schemes. However, after facing numerous problems with contract farmers, Aquastar

began to leave the area and Charoen Pokphand Foods PCL. (CPF) came to dominate shrimp farming industry in southern Thailand instead. CPF's interests in the shrimp farming industry, as well as its large financial resources, allowed the industry to proliferate rapidly. In one year, CPF purchased large paddy lands in Hua Sai, south of Pak Phanang, and converted the lands to shrimp ponds. CPF also owned numerous feed mills, hatcheries, and cold storage and processing plants in both the Nakhon Si Thammarat and Songkhla provinces. Instead of practicing a full contract farming scheme, local farmers bought shrimp larvae for stocking, feed and fertilizers, and other supplies from CPF and marketing services, while local farmers provided their ponds and labor. The CPF group controls 70% of Thailand's shrimp feed market and have the power to keep feed prices artificially high in order to drive out small-scale farmers so CPF can buy up their ponds (Niemeier, 1990). The vast expansion of shrimp farming into the southern provinces led Thailand to become the world's leading producer and exporter of cultured shrimp in the 1990s (FAO, 2000). The number of farms increased from 3,500 farms in 1980 to 26,000 in 1997, covering an area of 80,000 ha, of which 85% were intensive (Huitric, et al., 2002).

In addition to the production risks, the shrimp industry is also subject to export conditions such as the exchange rate fluctuation, competition with other producing countries, and changes in tax, tariffs, policies or restrictions from importing countries. By the end of 1998, after the 1997 Asian Financial crisis, financial restructuring resulted in an increase in shrimp production in other crisis-ridden Asian countries and a decrease in demand from recession-ridden Japan. Consequently, shrimp farmgate prices in Thailand plummeted to less than 50% of the peak prices, rendering many farmers in debt and unable to recoup their investments once again (Huitric, et al., 2002). In Thailand, over 20% of shrimp farms that are located in former

mangroves were abandoned after 4 - 5 years, as many as 50% of the total number of ponds in the country were disused in 2000 (EJF, 2003).

Shrimp farming is an inherently a high-risk business. Most shrimp farms in Thailand are owned by small-scale farmers who jumped on the bandwagon because of the attractiveness of a potential high return. Unfortunately, disease outbreaks and volatile markets two-thirds of Thai shrimp farmers to suffer large financial loss. Many shrimp farmers fell in debt and entered into the poverty spiral. The resulting inequality within communities that were dominated by the shrimp farm industry lead to the degradation of community ties (EJF, 2003). Furthermore, the economic loss to local communities from mangrove destruction by shrimp farming was substantial. The loss includes the value of the use of wood and other resources from the mangroves as well as the benefits in terms of off-shore fishery access and coastline protection. Therefore, despite the benefits generated from shrimp products being high, it becomes less economically viable once the consequences generated by mangrove destruction and water pollution are included (Sathirathai & Barbier, 2001).

Many scholars have investigated the power of discourse in forest resources and agriculture in Thailand. However, very few studies have been done on the discourse in marine resources and aquaculture in Thailand. A Thai scholar who studied the shrimp farming discourse in Thailand was Lertchai Sirichai (Lertkrai, 2009). In his study of shrimp farming in the Songkhla Lake Watershed Area, he pointed out that despite many other factors that may have led villagers in Songkhla Lake Basin to join the shrimp farming industry, the most important factors were the ‘shrimp farming discourse’ which was coproduced by the state, businesses and local universities (Sirichai & Duangsuwan, 2009). He further explained that the discourse was a set of ideas and practices that influenced villagers to participate in such a high-stake business. Villagers

were told that they could get rich very easily, because raising shrimp is an easy undertaking. They were told they could get all the support they need to raise shrimp from feed companies, the government, and local universities. The villagers were also told that feed, medicine, tools, appliances, and other supplies they needed were readily available and were well-researched to meet high standards. The advertisement painted the image of poor farmers or fishers who became rich by becoming shrimp farmers. Government agencies, both Bangkok and locally, disseminated information through publications, training, and outreach programs. The information disseminated highlighted shrimp farming processes, shrimp disease prevention and treatment, without mentioning any possibility of failure. Finally, the most influential players in such a discourse production were agribusinesses who sent their agents to talk to villagers about the benefits of shrimp farming and organized workshops to advertise their products. They acted as such an adviser to shrimp farmers that shrimp farmers called them "shrimp doctors" or "shrimp guru." They also used friendly business names such as "Farmer's Friend Company" or "Shrimp's Friend Company." Because of this, shrimp farmers received most of their information from companies who only presented one-sided information about how good their products were and the benefits of shrimp farming.

In reality, shrimp farming doesn't really make small-scale shrimp farmers rich in a long run. During the first one to two years, shrimp farmers would get a good harvest. Afterward, they begin to experience many problems associated with disease outbreak that could occur at any time leading farmers to harvest shrimp prematurely or even lose the entire yield. Most small-scale shrimp farmers would fall into the same trap and many were bankrupted with lots of debt. However, the news about failure, bankruptcy, and indebtedness from shrimp farming never spread as fast or as much as the success stories. It appears that the information about the risks

associated with shrimp farming was intentionally withheld by the government and the business sector. Meanwhile, the failed shrimp farmers stayed silent to save themselves from embarrassment because failure was portrayed as a result of the incompetency of the individual shrimp farmers, not from the inherent risks of shrimp farming (Lertkrai, 2009).

The "get rich fast" narrative was reproduced both by the government and by private companies involved in shrimp farming businesses. Even local educational institutions promoted shrimp farming through various outreach programs. Farmers selectively believed only the success stories, turning a blind eye to the warning signs from fellow farmers who failed, attributing it to the individuals' incompetency (Sirichai & Duangsuwan, 2009). The narrative of "get rich fast" has always been a trap for Thai farmers during this transitional period from subsistence into market economy. When most shrimp farmers learned the reality, it was often too late for them to turn around. Most people took loans with all their properties as collateral to invest in pond construction. Many small-scale shrimp farmers think of shrimp farming as a gamble that they must continue to play to get back what they have already lost, only to end up in bankruptcy and further indebtedness.

Shrimp farming development in Thailand resulted in a widespread mangrove deforestation and degradation. Mangrove forests are not suitable for shrimp farming because of their acidic soil, which requires more treatment hence resulting in a higher production cost and time (KM, 2018). Yet, many shrimp farms are located on former mangrove forestland because it was more affordable than other coastal property elsewhere. Mangrove clearing in Thailand resulted in the loss of half of all mangrove forests in 35 years from 1961 to 1996, from 364,000 to 168,700 ha respectively (see Figure 3.1). It is important to note that mangrove planting efforts

have in fact resulted in an increase in mangrove "areas" after 1996 (see Figure 3.1) as I will explain later.

About one-third of this clearing became shrimp ponds. Regionally, the areas of mangrove forests were converted into shrimp ponds for 44% in the Eastern region, 39% in the Southern region along the Gulf of Thailand, 23% in the Central region, and 2% in the Southern region along the Andaman Sea (see Figure 3.2) (Huitric, et al., 2002; Naito & Traesupap, 2006).

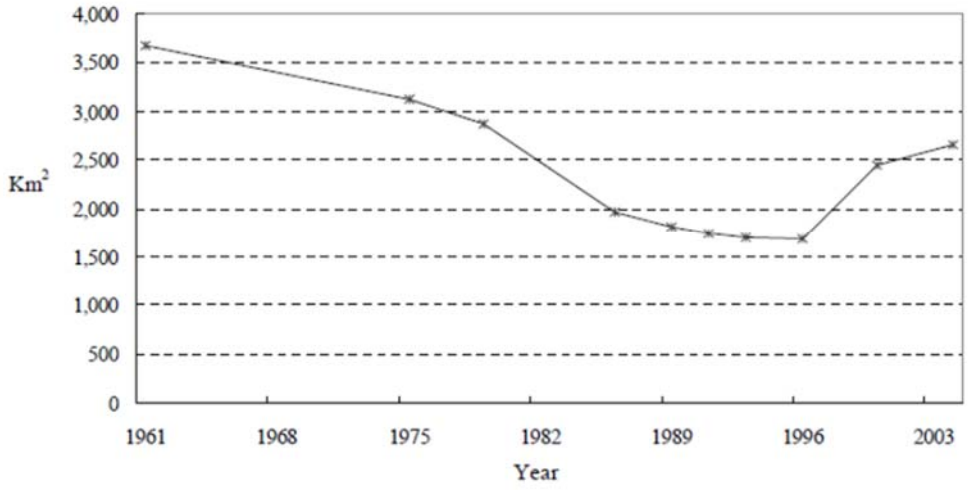

Figure 3.1 Changes in mangrove area in Thailand from 1961 - 2004. (Source: Naito, T., & Traesupap, S., 2006)

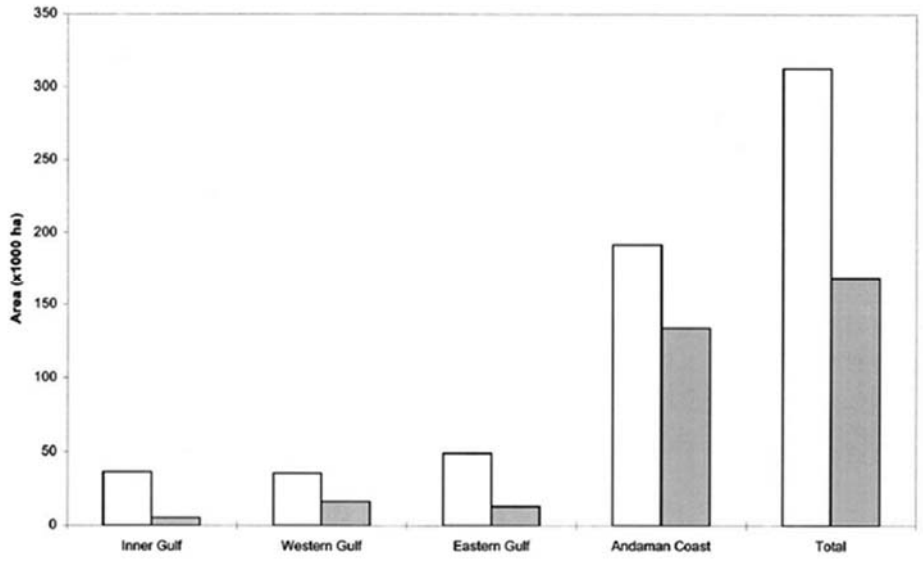

Figure 3.2 Regional changes in mangrove area in Thailand from 1975 to 1993. (Source: Huitric, M., Folke, C., & Kautsky, N., 2002)

Mangrove Forestry

Mangrove Ecology

Mangrove ecosystem is a complex ecosystem which composes of interrelated vegetation assemblages and geomorphologically-defined habitats (Woodroffe, 1992). Mangrove trees are found in the intertidal zone where freshwater and saltwater meet (Hogarth, 2015). Although mangroves are found only in tropical and subtropical areas, mangroves were first studied by the European biologist after the European colonization of the Americas. The name "mangrove" was given by a biologist name H.H.M. Bowman after the Portuguese word "mangue" meaning "plant colonies that thrive in muddy sea shores" (Aksornkoae, 1993). The term "mangrove" is generally is referred to the habitat or "mangrove ecosystem" (Duke, 1992).

Mangrove are influenced by a number of factors ranging from coastal physiography, shore morphology, tides and river flow, waves and currents, salinity, dissolved oxygen, soil characteristic, sediment, and climate. Since mangrove habitat is inherently subject to the fluctuations of salinity and flooding, mangrove trees have various adaptive mechanisms to live in such unpromising environment – one of the characteristics that differentiate mangrove trees from most other trees. Different mangrove species have diverse mechanisms to cope with salt differently such as exclusion of salt at root surface, possessing tissues with high tolerance, and excretion of salt at leaves. For example, *Avicennia*, *Rhizophora*, *Sonneratia*, and *Xylocarpus* accumulate and deposit salt in the bark of stems and roots; while *Acanthus*, *Aegiceras*, *Aegialitis*, and *Avicennia* have salt glands on their leaves. This various mechanisms also make the extent of salt tolerance of each species differently (Hogarth, 2015).

Another important factor affecting mangrove health and distribution is the inundation regime, which in turn is influenced by tides and tidal flow. The inundation regime does not only

create fluctuation in salinity in mangrove, it also influences the amount to dissolved oxygen in mangrove soil (Hogarth, 2015). Dissolved oxygen is essential for mangrove trees in the processes of respiration, photosynthesis, and decomposition. Thus, it is one of the factors controlling species composition, distribution and growth (Aksornkoae, 1993). Mangrove soil already has very limited oxygen which mostly found only close to the soil surface, waterlogged condition can exacerbate the limited amount of oxygen resulting the anoxic soil condition. When oxygen is acutely depleted due to an anaerobic respiration by bacteria, methane and sulphide are produced making mangrove mud being extremely pungent and very unfavorable for other plants and faunas. Mangrove must also adapt to anoxic and hypoxic conditions by various ways such as developing aerial roots such that found in *Rhizophora*. The root system of mangrove also functions as anchorage in fluid and unstable soil condition in mangrove forest (Hogarth, 2015).

Another distinctive feature of mangrove is its reproductive system. Most mangrove species are vivipary, meaning that the growing embryo remains and dependents on the parent tree until developed into a seedling, instead of a seed or a fruit as in most other tree species. *Rhizophora* have developed the most advanced form of vivipary. The attached seedling of *R. mucronata* or the Big-leaf Kongkang can reach the length of 1 m (Hogarth, 2015). The detached seedling can be called “propagule.”

Not only mangrove is influenced by multitude of environmental factors, mangrove itself is a significant ecosystem engineer highly capable of altering their physical environments. Mangrove can regulate resources available to other species both directly and indirectly by dynamically regulating the sediment characteristics including the amount of nutrients and chemical compositions. Mangrove can also reduce the speed of water flow by various ways. For example, tree trunks and root systems can create friction to water flow. In turn, restricted water

flow results in an increase sedimentation and anoxic condition. Therefore, different species can alter their physical environments in different ways (Hogarth, 2015).

Healthy mangrove forest serves as habitats, feeding, breeding, and nursery grounds for faunas. Mangrove forest can also shelter the shores from some kinds of waves, and can protect some areas from erosion. Healthy mangrove forests can also remove nutrients and heavy metals, reduce suspended solids, and absorb toxic materials from riverine water before discharging into the bay and the sea (Aksornkoae, Tokrisna, Sugunnasil, & Sathirathai, 2004). Therefore, healthy mangrove forests act as filters for coastal waters, which in turn contributes to the well-being of other coastal and marine ecosystems such as coral reefs. The existence of, and more importantly, the accessibility to healthy mangrove forests provide invaluable ecosystem services and livelihood resources for local coastal communities. Mangrove resources have been major sources of food, medicine, fuel, and income for coastal communities for generations. Destruction of, or restricting the access to healthy mangrove forest can totally destroy the livelihoods of large numbers of local coastal communities.

Although mangrove forests offer tremendous benefits to both ecosystems and coastal communities, the uncritical promoting and reproducing of the mangrove narratives can result in more harm than good. In fact, the practices that stem from such narratives often yield negative results. In order to understand how and why the discursive practice of mangrove narratives has come into being, executed, and led to failure as an example in Talumphuk, I will trace back to its historical roots.

Forestry institutions.

Since the 1700s, the efforts of early modern European states to increase state revenue turned “nature’ into “natural resources” (Scott, 1998). Scientific forestry was established to

maximize the yield from timber harvest and minimize the management costs. Scientific forestry was applied to Thailand during the colonial era beginning in the 1880s for that purpose, which was to maximize the Thai state revenue from timber harvest. However, scientific forestry became institutionalized and became the blueprint for forest management of mangrove and upland forests in Thailand, forest regardless of the purpose.

As a result of the Bowring Treaty in 1855, Siam attempted to take systematic control over the teak industry both to secure income as well as to prevent the British teak industry from exploiting Siam's teak. Ironically, Siam turned to the British government to ask for assistance. The British government responded by sending H.A. Slade, an English official who was stationed in India to assist Siam. This eventually led to the establishment of the Royal Forest Department (RFD) in 1896 under the Ministry of Agriculture and Cooperatives. Slade served as the first director of the RFD and laid the foundation for the country's forestry policy. He proposed that the Thai government set up a centralized national forest policy, mainly to collect tax from the teak forest concessions in peripheries/principalities. From this, the only way to produce timber legally was through logging concessions by using Western forestry knowledge. Subsequently, Thai scholars were sent to study forestry from British schools in India and Burma. The second and third directors of the RFD were also English officials. The first Thai director was educated in England with a Thai government scholarship. After that, the later directors all received forestry education from Western countries (Khattiyoes, 1995; Sunthornswat, 1977; Thitibordin, 2016).

In 1935, the first Forestry School in Thailand was founded in Prae Province, which was called Prae Forestry School, although it was later moved to Kasetsart University in the Department of Forestry in Bangkok. More recently there are other schools that now offer programs in Forestry. However, Kasetsart's Forestry School remains the only flagship Forestry

school in Thailand and the only one offering Doctoral degrees. The school has produced technocrats to lead the RFD since its conception, using the same materials and curriculum that have been reproduced for several generations. They foster certain values, beliefs, and organizational cultures that cement their perceptions and means they often use toward different issues. Most importantly, this group claims to be "legitimate experts" in forestry and uses such a claim to justify the policies they have proposed. When faced with opposition, they would attack their opponents as "those who don't really know the facts" (Kuhacharoen, 1991).

After WWII, the Food and Agriculture Organization of the United Nations (FAO) began to influence the forestry affairs in Thailand by sending G.N. Danholf, the forestry expert to survey the state of Thailand's forestry and provide recommendations. FAO also provided financial support to Thai officials for training. In 1948, G.N. Danholf recommended that Thailand should preserve the 40% of the country's land area as forest, which has become a blueprint for Thai forestry policies for many decades.

In 1952, the Teak Improvement Center in Lampang and the Tree Improvement Center in Chiang Mai were established with the support from the Danish government. Four regional silvicultural research stations were also established, followed by more stations afterwards (Changtragoon et al., 2012). In 1953, many Thai officials received training organized by FAO, while the U.S. Agency for International Development (USAID) also joined to support in terms of providing financial aid for education and outreach as well as other operation costs. As a result of the FAO recommendation for developing countries to increase the capacity for fuel wood production by increasing forest timber harvest, Thailand became the focus of such an endeavor because it possesses many favorable conditions for investment, such as lots of support from the Thai government, a high demand for technology and capital from the outside, and low labor

costs. Thailand thus became an area of interest from investors in the forest plantation business and there were many multinational corporations attempting to invest in Thailand such as the Birla Group from India and the Paper Pulp Company from Japan (Kuhacharoen, 1991). In addition, many forest researches have received financial supports from various international and development organizations including the Canadian International Development Agency (ClDA), the Australian International Development Assistance Bureau (AIDAB), the United States Agency for International Development (USAID), the Japan Society for the Promotion of Science (JSPS), the United Nations Development Programme (UNDP), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Food and Agriculture Organization of the United Nations (FAO) (Aksornkoae, 1993).

Following the founding of the RFD, the Forestry Act was established in 1941. It was the first time that Thailand had a definition of "forest." It is defined as "the land that is not owned by any party by legal means" (RFD, 2009). This definition means that forest also included areas where people had already occupied or cultivated. The state's technique to control forest resources was to demarcate the forest as a state's area and issuing laws to justify its officials to conduct their authority over the forest resource allocation. In 1990, in an attempt to control the populations who occupied the forest, the RFD, along with other government organizations, in particular the Internal Security Operations Command (ISOC) of the Thai Army, initiated a project to relocate forest villagers to allocated areas. This project was called, "the Land Allocation to the Poor Project." The justification for this project was to increase the forest area of the country to 40% of the total area and to resettle "illegal" forest encroachers, so that they have a new "legal habitat and legal source of livelihood." Following the people's resettlement, the RFD and its partners had continued the reforestation of watershed forests (Onprom, 2011).

During the fifth NESDP (1982 – 1986), the forest policy shifted the focus towards forest reforestation and afforestation. As a result, in 1985, the Cabinet passed the National Forestry Policy, prescribing that at least 40% of the of the country's area should be forested. This forest area is divided into 25% of the country as forest conservation area and 15% as economic forest area. The policy focused on promoting faster growing trees to utilize for firewood and encouraged farmers to participate in afforestation project under state supervision so that the operation would be in accordance with the "scientific principles." There was also a campaign to encourage the general public to volunteer for reforestation projects in degraded watershed forests. The policy also prescribed the allocation of degraded forest areas suitable for agriculture to landless farmers. Contrary to the expectation, there was an increase in the numbers of landless farmers and a decrease in forest area every year (Kuhacharoen, 1991).

In 2002, when Thaksin Shinawatra was a prime minister, the Ministry of Natural Resources and Environment (MONRE) was established under the Bureaucratic Restructuring Act of 2002. As a result, the RFD was divided into three departments; namely the Royal Forest Department (RFD), the Department of National Parks, Wildlife and Plant Conservation (DNP), and the Department of Marine and Coastal Resources (DMCR), as well as 75 Provincial Natural Resources and Environment Offices, all under the MONRE (RFD, 2009). Therefore, forest research offices are scattered in the RFD, DNP, and DMCR (Changtragoon, et al., 2012). Since MONRE was a new ministry at that time, officials in the new units were transferred from previous units. For the DMCR, the majority of its officials were transferred from the Fisheries Department, except those working on mangrove forests were transferred from the RFD. The DMCR has since become the main agency to manages mangroves that are outside of national parks and naval areas. The DMCR has a central office in Bangkok, six regional offices, and 45

Mangrove Management Units (MMUs) responsible for mangrove monitoring and law enforcement, mangrove conservation and planting, and local education on the importance of mangroves (DMCR 2015). To reiterate, according to the document published by the FAO and IUCN, "in Thailand, mangroves are classified as forests. According to Section 4 of the Forest Act 1941, forest is any land which has not been acquired by an individual under the Land Code, and according to Section 54, all forest is state-owned" (Beresnev, Phung, & Broadhead, 2016). Therefore, mangrove forests are essentially treated with the same set of knowledge and by the same group of technocrats as terrestrial forests. Therefore, mangrove reforestation has always been included in the National Forest Policy with economic profits being the main purpose.

Another turning point in forest policy direction came from a series of events that lead to the logging ban in 1989. Although the government cut the concession area in half in 1979, they ceded to the pressure from influential loggers in 1984 and thus reversed to allow 15% for timber harvest (Ongprasert, 2011). Some 300 concessions were still valid when logging was officially banned in 1989 for inland forests (Lohmann, 1993). In 1996, logging was then banned in mangrove forests and in 2005, all mangrove concessions were all abolished. In 2000, all mangrove areas were classified as 'mangrove conservation zones' to be maintained in accordance with the National Reserved Forest Act 1964. Since the mid-1990s, national policy regarding forest resources and particularly mangroves have shifted from *exploitation to conservation* as a consequence of a series of environmental movements both in Thailand and in the international arena, creating new waves of narratives in "natural resources and environmental conservation". Since then, mangrove areas have recovered "in numbers" as a result of various initiatives outlined in chapter 4. In 2015, the total national area stood at around 2,400 km^2, increased from 1,675.84 km^2 in 1995 (Beresnev, et al., 2016).

Environmental movement in Thailand.

An exposé of a hunting scandal in the military government in Thung Yai Naresuan Wildlife Sanctuary in western Thailand was done by a student-organized ecological club in 1973. The exposé not only led to an unlikely investigation of the military government, but also the increased interest in environmental movements among the youth and the general public. Then in 1974 – 1975, another successful student protest forced the government to withdraw controversial mining concessions in southern Thailand that had been granted by a few shareholding high government officials to the Union Carbide-dominated Thailand Exploration and Mining Corporation (TEMCO). The event is known as the TEMCO movement and its success resulted in a growing number of environmental groups and movements (So & Lee, 1999). At the same time, an increase in global linkage fueled the power of the Thai environmental movement both in terms of morality and financial support. Furthermore, in November 1988, a devastating flood resulted in mudslides that were believed to be deforestation-related occurred in southern Thailand that led to the deaths of several hundred villagers (Hirsch & Lohmann, 1989). This incident made the headlines and conveyed to the general public the possibility of terrifying impacts caused by deforestation. Eventually, an incident that created a huge wave of environmental movements in Thailand came in 1990 when Sueb Nakhasathien, a leading conservationist, took his own life as an act of protest to signify the importance of Thailand wildlife and environment (So & Lee, 1999). Therefore, by the end of 1980s, there was more clear evidence that many undertakings in the name of "development" resulted in environmental degradation. Nevertheless, not only has the government never admitted that such degradation was caused by "development" policies from the state, but the technocrats in the Thai government also promptly joined the "environmental bandwagon," and often placed the blame on marginal

groups and overpopulation. Since then, the word "environment" has become as much a buzzword as the word "development." In 1987, two concepts were married after the World Commission on Environment and Development (WCED) published the document "Our Common Future" or as widely known as "the Brundtland Report." The term "sustainable development" has been popularized and undoubtedly adopted by Thai government, NGOs, and educational institutions as a "blueprint" to move forward. Thai government used this opportunity to continue and reinforce its long-standing technique of forest management and plantation, but this time with the new outfit under the guise of forest "conservation" for "sustainable development" including the practices of mangrove management.

Mangrove narratives.

Mangrove forest was perceived by the European colonizers during the 17th to 18th century as "a repugnant, hostile, unhealthy and impenetrable environment." With this conception, the colonizers aimed to drain, clean, and improve mangrove in large scale for the productive purposes (Cormier-Salem, 2006). The shrimp farming boom in the 1980s and 1990s had intensified the productive role of mangrove to even larger extent. In a complete reversal, the perception of mangrove forest as "wastelands" has turned into "resources" and eventually to the "green coastal guardians" and "soldiers of our coasts."

Traditional mangrove narratives are commonly heard concepts and explanations that can be considered as dominating discourses. Such narratives have been adopted as "truth" due to the social processes, rather than the site-specific empirical biophysical evidences. Narratives are the stories that compose of beginnings, middles, and endings (Forsyth, 2003). The mangrove narratives started with the images of healthy mangrove ecosystems that providing substantial services to both the environment and coastal communities. Metaphors are often used in the

narratives to reinforce the conviction. The metaphors used in mangrove narratives include "mangroves are: 'tree/wood banks' as it can be used for fuel and construction; 'home' to many flora and fauna to live; 'kitchen' from numerous fallen leaves each year, and decomposes as nutrients for the growth of many plants and animals; highly efficient 'sewage treatment plant' as mangrove plants have special characteristics, especially the root system that helps absorb waste and purify the water; 'air filter plant' that can reduce carbon dioxide and increase the amount oxygen to refresh the air; 'hospital' that can provide herbs to coastal communities; 'coastal wall' can effectively prevent soil erosion and severe storms; 'natural classroom' coastal and marine research; 'bridge' that connects land and sea for the balance of coastal ecosystems; and 'granary or rice bowl' of people living along the coast and the surrounding area for their livelihood… Mangroves are a treasure trove of coastal land that is absolutely vital to the country's social and economic security. Therefore, the need for replanting and restoring of mangrove forests is essential to preserve the value of mangrove forests" (Aksornkoae, 1999). Another example excerpted from the MFF, India document produced in 2010 stating that,

> Did you know that someone protects our coasts and sea shores? No…it is not the Coast Guard. Nor is it the Navy. Our protectors do not speak. They go about their functions silently. That is why they are called the 'silent green sentinels of the coasts.' They are mangroves! (MMF, 2010, p. 4).

The middle of the story is about how mangrove has been degraded. Although shrimp farming was also part of the story, the most common causes for mangrove degradation in mangrove narratives are overpopulation in coastal areas, as well as the deforestation and overexploitation by local people mainly for household firewood. Therefore, the endings of the

story are that, mangrove preservation and reforestation are necessary, along with the prohibition of local access since they are the "main culprits" for mangrove degradation.

This traditional mangrove narratives led to the mangrove conservation and reforestation policy by the Royal Forest Department (RFD) since the early 1980s. However, such mangrove narratives got revised and became popular among the general public and were adopted by NGOSs and private companies as part of their corporate social responsibility (CSR) programs after the 2004 Indian Ocean tsunami. During the tsunami, residents in some areas survived because they were sheltered by dense mangrove forests. The stories of survivors became popularized by the media, and the U.S. President Bill Clinton subsequently expressed his vision to rebuild the tsunami-hit areas with natural infrastructure to strengthen resilience against future natural disasters. As a response, the International Union for Conservation of Nature (IUCN) and the United Nations Development Program (UNDP) developed "Mangroves for the Future" (MFF) in 2006. The MFF is a partner-led program to promote investment in coastal ecosystem conservation for "sustainable development" by providing a platform for collaboration among various agencies, sectors and countries (TGLL, 2009). The revised mangrove narratives have turned mangrove planting activities from being only the state's responsibility into the public activity signifying as a benevolence act.

Mangrove management.

There are two ways to manage mangrove namely mangrove forest management and mangrove area management. Mangrove forest management is done by using forestry science which is called "silviculture," while mangrove area management is incorporated into land use planning such as establishing protected areas (Wongsakul, 1992). Historically, the sole objective of mangrove silviculture in Thailand was for charcoal production. The exploitation of mangrove

forests was operated under concession permits. In Thailand, *Rhizophora apiculata* and *Rhizophora mucronata* are the two large-scale commercially planted species. The silvicultural system applied was clear-felling in alternate strips (Aksornkoae, 1993). Unsurprisingly, the forestry scientific knowledge of planting these *Rhizophora* are thus well-established even from before 1961 and widely disseminated among Thai foresters, with the main goal of achieving maximum yield.

The first attempt to estimate the global mangrove area was in 1980 as part of the FAO/UNEP Tropical Forest Resources Assessment (FAO, 2005). It was revealed an alarming decrease in mangrove areas globally. This report was reinforced by the rising wave of international and national environmental movement. As a result, mangrove conservation has been brought into the forefront of the global conservation stage ever since. The mangrove conservation agenda was first included into the Cabinet Resolution in 1996 with the goal of maintaining the mangrove conservation areas to be more than 0.16 million ha (Win, 2018). Since then, mangrove conservation has been included into the National Social and Economic Development Plan (NSEDP). For example, the 9th NSEDP (2002 – 2006) prescribed that mangrove forest should be conserve and restore to cover an area of at least 200,000 ha (Osbeck, Boromthanarat, & Powell, 2012). The 11th NESDP (2012 – 2016) specified that mangrove should be reforested with the target area of at least 800 ha per year (Beresnev, et al., 2016).

The Mangrove Management Units (MMUs) are regional units within the DMCR. They are responsible for meeting the target specified by the national policies. These units must actively find the new areas for mangrove planting. Mangrove planting by DMCR are usually done either by the MMU staffs or by hired local community members (Beresnev, et al., 2016).

Financial support from international organizations for mangrove restoration and disaster reduction projects have poured into Thailand especially after the 2004 Indian Ocean tsunami (RECOFTC, 2014). Donors include multilateral, bilateral, and domestic public finance, as well as private sector donors (Beresnev & Broadhead, 2016). The most important one that aims to work directly toward mangrove issue is the Mangrove for the Future (MFF) program. It has grown to include other UN agencies, such as the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), CARE International, Wetlands International (WI), the Asian Institute of Technology (AIT), Bay of Bengal Large Marine Ecosystem project (BoBLME), Corporate Social Responsibility in Asia (CSR Asia), as well as COastNet (MFF, 2009).

As mentioned previously that MFF is a partner-led program that receives financial supports from various donors. The examples of donors of the MFF program include the governments of Australia, Germany, Norway, Sweden, and UNDP and UNEP. The biggest donors are the Norwegian Agency for Development Cooperation (Norad) and the Swedish International Development Cooperation Agency (Sida). During the first phase (2007 – 2009), Norad and Sida contributed in the amount of NOK 30 million and SEK 29 million. The total contribution from donors to the MFF is around USD 12 million. MFF has provided project funding by two grant categories: a Small Grant Facility (SGF) and Large Grant Facility (LPF). Each country initially received an allocation of USD 100,000 for SGF projects. Large projects can receive a budget from USD 50,000 to a maximum of USD 300,000 per project. Nakhon Si Thammarat Province was also included as a project site receiving Large Grant Facility (LPF). The project “Demonstrating best practice at local level (SAO) and linking to National level” is administered by the Sustainable Development Foundation (SDF) (MFF, 2011).

MFF has worked closely with the DMCR through providing financial supports for various projects relating to mangrove restoration. In fact, DMCR and IUCN have been partners in conservation since 2002 (IUCN, 2016). In many developing countries including Thailand, the funding for mangrove restoration provided by national governments through national budget allocation may in fact come from multilateral and bilateral donors. It is thus difficult to differentiate the actual sources of funding at the national level (Beresnev & Broadhead, 2016). According to my personal conversation with the DMCR officials, there is no public accessible record of the detailed budget allocation to local government units specifically for mangrove restoration. Particularly in recent years when the mangrove planting has become extremely popular for CSR activities, the government budget allocated specifically for mangrove planting has reduced dramatically. However, mangrove planting by the DMCR has still occurred using the budget allotted from other related activities. As an example of the price for mangrove planting, according to the Bureau of the Budget in December 2018, the medium price for mangrove planting is THB 6,390 – 8,900 per rai (1 rai = 0.16 ha), THB 3,560 per rai for mangrove plantation maintenance, and THB 2,770 for seedling provision (Bureau of the Budget, 2018).

Another objective of the MFF is to promote the private sector partnership such as with Tata Chemicals, Chevron, and the Six Senses Hotels Resort Spas (MFF, 2010). Mangrove planting can be considered one of the most popular CSR activities in Thailand since 2005. Most mangrove planting activities for CSR programs are based on one day activity and the survival rate is usually very low. Recently, large companies such as Charoen Pokphand Foods Public Company Limited (CPF) and Marriott Hotels and Resorts Thailand (Marriott) have turned their focus on long-term mangrove restoration. CPF signed a national level memorandum of

understanding (MoU) with the DMCR in 2015 to commit to larger- and longer-term mangrove planting projects. It aims to conserve and restore over 320 ha of mangrove. Marriott also signed the MoU with IUCN in 2013 to commit to a three-year mangrove restoration activity. It also raised funds for mangrove restoration from its customers in selected hotels which had reached USD 30,000 in 2014 and USD 60,000 in 2015. The funds are donated to IUCN for financing mangrove planting projects (Beresnev & Broadhead, 2016).

The specified rationales for donors to provide funding for mangrove restoration projects have seemed be cookie-cutter documents of mangrove narratives. There are few sources of information particularly with regards to scientific data on mangrove in Thailand written by even fewer authors which have been re-circulated, re-cycled, and re-produced among these project documents. This process of reproduction and dissemination helps perpetuate the mangrove narratives. Unsurprisingly, as for funding recipients, they would not hesitate to easily adopt such views of mangrove narratives into their agenda, as well as willingly put the narratives into practice. Both the recruitment of donors and recipients of mangrove restoration projects also help intensifying and expediting the processes of narrative perpetuation. Although it is not an easy task to pinpoint a specific event that mangrove narratives were produced at the first place, it absolutely is the product of the co-production by multitude of actors evolving from a series of events.

Conclusion

This chapter describes the historical background of shrimp farming development and the arguments from its promoters as the “Blue Revolution” to provide food security, increase rural economic development, and reduce the pressure of wild-caught fisheries. It then describes the shrimp farming processes and argues that the reality is opposite to what shrimp farming

promoters claimed. The intensive shrimp farming development poses more socio-economic and environmental impacts than the benefits gain, particularly on the destruction of mangrove forest. The chapter also traces the historical progression of forestry institution in Thailand to illustrate that scientific forestry and institutions in Thailand have been influenced by the European and the U.S. foresters since the colonial and postcolonial eras. Such knowledge and technique were originally aimed to maximize revenue from timber harvest. However, such dated techniques have been stabilized, transferred, reproduced, and practiced until present day with mangrove management. Even though mangrove forest is currently considered as coastal resources and is managed under the relatively new Department of Marine and Coastal Resources (DMCR). In fact, the DMCR officials who manage mangrove forest are transferred from the Royal Forest Department (RFD). In other words, mangrove forest is managed by the same techniques and the same sets of knowledge of those used in the upland forest.

CHAPTER 4. PAK PHANANG AND TALUMPHUK

Pak Phanang

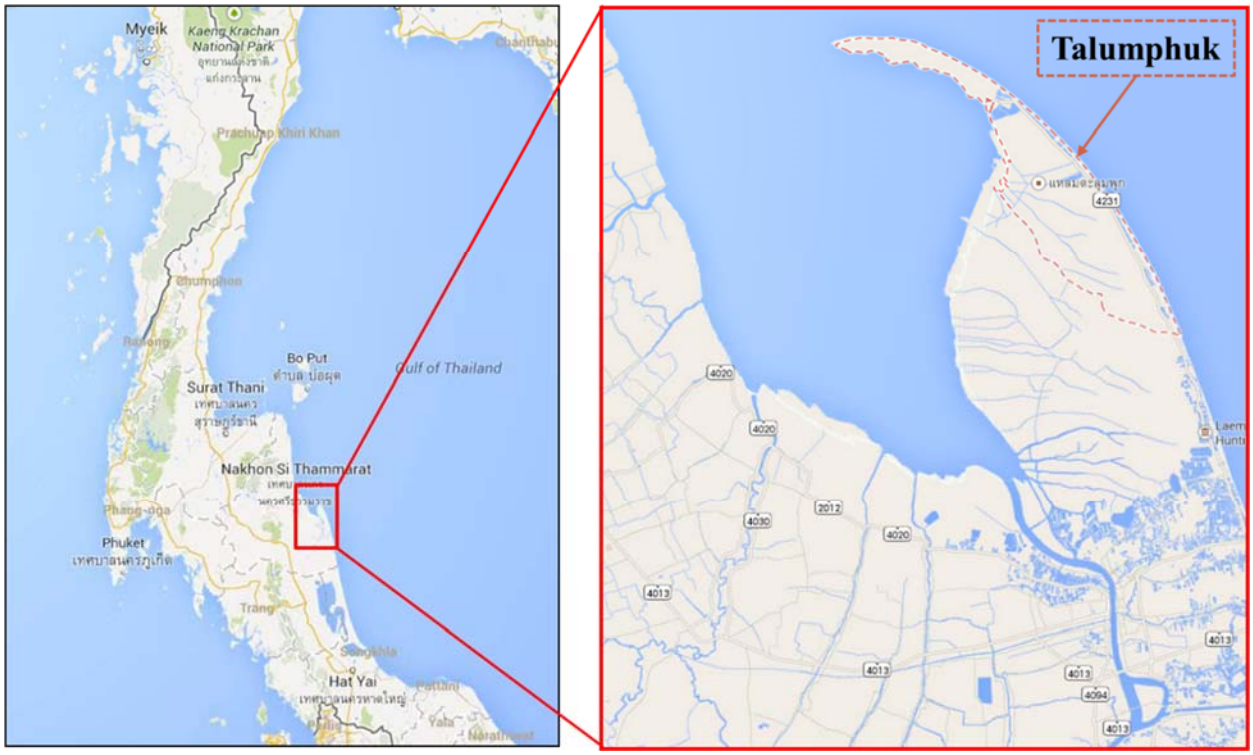

Figure 4.1 Maps of Nakhon Si Thammarat Province and Talumphuk. (Source: Google Map)

Pak Phanang is the name of a District in which Talumphuk is located, it is also the name of the river basin or watershed, the name of the bay, and the name of the river. Pak Phanang River Basin (the Basin) is located on the eastern coast of southern peninsular of Thailand. It covers an area of approximately 3,000 km^2 across the three provinces of Nakhon Si Thammarat, Pattalung, and Songkhla. The main river feeding the Basin is the Pak Phanang River (the River) which includes 119 canals (Bunsuaikhwan & Bunsuaikhwan, 2000). The River meanders for 150 km from southwest to northeast east, through the basin and into Pak Phanang Bay (the Bay) on the Gulf of Thailand (Suphawajruksakul, 2005). The Basin can be divided into 3 parts; the upper part in the southwest, the middle, and the lower part in the northeast adjacent to the Gulf of Thailand (Phipob Prabnarong, Nanthapichai, & Nakrod, 2008). The upper part in the southwest

of the Basin consists of mountain ranges, hills, and undulating plateaus about 15-50 m above the sea level. The middle part of the Basin is hilly with flat terrain about 5-10 m above sea level. The lower part is a coastal plain which consists of a tidal floodplain and swamps that are connected to a spit and sandy beach. The beaches stretch for 80 km in the north-south direction from Laem Talumphuk to Ranote District in the south of the Songkhla Province (Suknual, 2003). The coastal plain is flooded annually during the rainy season, affecting an area of about 1,624 km^2; around 60% of which are agricultural areas. Although flooding occurs naturally every year, the recent infrastructure developments have increased the severity of flooding by blocking the water drainage (Suphawajruksakul, 2005). The Basin is referred to as "the land of four waters," because there are four types of water and respective ecosystems in the region. These include saltwater, freshwater, brackish water in the estuary of the Bay, and acidic water from the swamp (Lertkrai, 2009). Within the same area, the types of waters can be shifted during different seasons.

The Bay is located on the coast of the Gulf of Thailand in the Nakhon Si Thammarat Province. It consists of accumulated sediment load from the River that has been deposited in a submerged tidal flat that has an area of about 60 km^2; about 3 km long on the west and about 6 km long on the east, approximately 1 - 2 m in depth. The outer eastern seaboard of the Bay is a sandy beach that stretches along Laem (Cape) Talumphuk. The inner and western part of the Bay is a mangrove forest of approximately 48 km^2 (Boonchuwong, 1995). The Bay is bordered by the Pak Nakhon Subdistrict in the Nakhon Si Thammarat Municipality (Muang) to the west, and by the Pak Phanang District to the east. Because of this, the Bay used to be an important water transportation route between Pak Phanang and the Muang. The area around the Bay can be divided into three zones according to the land use: the municipal area, which is a residential area;

outside the municipal area, which are hamlets, paddy fields, fruit and vegetable plantations and shrimp ponds; and the rest are non-cultivated areas that consist of mangrove forests, swamps, marshes and beaches (Boonchuwong, 1995). The last zone also includes abandoned shrimp ponds and mangrove plantations. Talumphuk land use is also categorized into this last zone; the non-cultivated area.

The weather in Pak Phanang is influenced by the two monsoon seasons, the northeast and southwest monsoons. The northeast monsoon is associated with winter in the northern hemisphere, which is around November to February. In other parts of Thailand, the northeast monsoon brings dry and cold weather. On the east coast of southern Thailand, however, the northeast monsoon brings stormy and rainy season with high swells and waves from the sea. On the other hand, the southwest monsoon in May to September is the rainy season for other parts of Thailand but is relatively hot and dry in the Bay. Additionally, Thailand is prone to tropical cyclones since it is in the path from both the Indian and the Pacific Oceans. In southern Thailand, tropical cyclones which reach the depression level (34 knots or 63 km/h) often occur in October to December. Southern Thailand has been struck by major tropical cyclones more than 5 times in the past 50 years. The most devastating tropical cyclone in Thai history was the tropical storm "Harriet" that originated in the Gulf of Thailand and reached the coast of Nakhon Si Thammarat Province on 25 October 1962. Its speed was approximately 90 km/h (49 knots) (Suphawajruksakul, 2005).

Tropical storm Harriet devastated the area and left lasting impacts on Pak Phanang's landscape and people. It altered the landforms of the seafloor, the riverbed, and water channels in Pak Phanang area. Sediments from the open sea were carried from deeper water and accumulated on the nearshore bottom, including in the water channels. Benthic animals were smothered by

sediments, while the water was filled with sediments and debris made it uninhabitable for pelagic animals. Therefore, the abundant fishery resources decreased dramatically after the typhoon. The storm also resulted in the accretion of the Talumphuk spit, shoaling of Pak Phanang Bay, and changes to the habitats for the marine ecosystem. In addition, the level of seawater and salt content of the soil increased, resulting in a decrease in agricultural production (Boonchuwong, 1995).

Livelihoods in Pak Phanang.

Rice farming.

During the colonization of Southeast Asia by European nations, Thailand was a major rice producer and exporter to feed the Chinese and Indian laborers who worked for the Western colonies in neighboring countries. The Bowring Treaty that Thailand made with Britain in 1855 to abolish the royal monopolies allowed free trade particularly in rice. The Siam government met the high demand by urging an increase in the rice production. As a result of the administrative reform by King Rama V in 1896, Pak Phanang was established as a new district within Nakhon Si Thammarat Province, which participated in the increase in rice production for export (Kanklew, 1985). Since Pak Phanang District (hereafter Pak Phanang) is on the low-lying floodplain, many areas were flooded the entire year. By the end of the 19th century, the government began to dig canals for better water drainage to increase the area where rice farming was feasible. The canals were also used for better transportation for farmers to get their rice to the market. Sukhum canal was dug in 1897 to connect Pak Phanang River with Bang Chak canals. Both canals remain important waterways for transportation (S Boromthanarat, Cobb, & Lee, 1991b).

Pak Phanang became a hub for rice production and export, especially after the first mechanical rice mills were built by Chinese immigrant-turned-entrepreneurs in 1907. Many immigrants from China came to Pak Phanang during this time to find jobs as laborers, middlemen, or merchants. Many more mechanical rice mills were built later, and they were all owned by Chinese merchants-turn-investors. The government encouraged the farmers to use the new equipment that claimed to be more efficient to harvest rice instead of using the traditional methods. By around 1940, irrigation and mechanization started to replace the traditional rain fed rice system. The expansion of rice production in the area, as well as its suitability as a port town, brought prosperity to Pak Phanang. Pak Phanang and its port became the center of the rice trade in Southern Thailand (Kanklew, 1985). The construction of the road from Pak Phanang to Muang in the early1940s, followed by the construction of a water gate on the Sukhum Canal in 1950, were major economic developments during that time. However, the land transportation gradually reduced the role of Pak Phanang as a port town since it replaced shipping, which subsequently affected the regional economy of Pak Phanang (S Boromthanarat, et al., 1991b).

During WWII (1939 – 1945), Japanese troops marched into Thailand in December 1941 and invaded Nakhon Si Thammarat. The Japanese took total control of Thailand's maritime trade and forced Thailand to trade with only Japan. All trade in Pak Phanang was halted, which had ripple effects including inflation, corruption, black-market trading, and hoarding of goods. This exacerbated the already depressed economy in Pak Phanang, which relied mainly on rice exports (Kanklew, 1985). In 1945, to repay war debts at the end of WWII, the Thai government took total control of rice exports, allowing exports only through only Klong Toey Harbor in Bangkok. Although the purpose of export control was to keep the price of rice high to increase Thailand's farm income, the effect turned out to be the opposite. Since the price of Thai rice was too high to

compete in world markets, there was a market glut nationally, causing rice prices at the farm to drop dramatically. Large scale mechanized rice mills in Pak Phanang all disappeared by the mid-1950s, leaving only small-scale mills operated by individual rice farmers (S Boromthanarat, et al., 1991a). When tropical storm Harriet struck in 1962 and destroyed all crops and properties, it became the last nail in the coffin of the already declining rice economy. As a result, the role of Pak Phanang as a rice trading center came to an end.

From a prosperous rice trade center and water transportation hub, Pak Phanang has turned into one of the most impoverished areas in Southern Thailand (S Boromthanarat, et al., 1991a). The Thai government has attempted to restore the economy of Pak Phanang by various initiatives, that included building the road connecting Pak Phanang to Muang to stimulate trading in Pak Phanang. However, as mentioned above, the road development reduced the role of Pak Phanang as a water transportation hub and marine shipping by enabling people to use land transportation instead (Kanklew, 1985).

Between 1977 to 1987, many attempts were made by the government to resurrect and increase rice production in Pak Phanang following the "Green Revolution" in Southeast Asia and elsewhere. The government developed policies to change rice growing technology by using modified rice varieties, mechanized plowing, double-cropping using faster growing strains, and increased the application of fertilizer and pesticides. Fifty percent of rice farms in Pak Phanang switched to grow high-yielding varieties twice each year, resulting in a much higher demand for freshwater. The government responded by dredging irrigation canals and installing additional water gates in the various canals (S Boromthanarat, et al., 1991b). Like many other places where the "Green Revolution" did not fare well, Pak Phanang rice farming faced the same outcome. Although increased fertilizer and pesticide use and mechanization might increase yields, they

resulted in an increase in capital investment and indebtedness, not to mention environmental, ecological, and health impacts. In addition, the traditional varieties with higher stalks are more resistant to the local weather patterns such that in Pak Phanang, where most areas are flooded many months a year followed by a drought. New varieties imposed by the government were vulnerable to the flood and drought cycle and require constant infrastructural support such as irrigation systems and floodgate management. When the flood in 1988 devastated both upland and lowland crops, followed by two years of usual drought, some farmers lost their entire crops and the total rice production drop dramatically. A wave of young people left the area to search for other occupations, causing a labor shortage. With poor economic returns from rice farming, many farmers turned to growing other crops or converted their rice farms into shrimp farms (S Boromthanarat, et al., 1991b).

Fishery.

In 1957, a Pak Phanang shipping company owner hired two Japanese fishers to teach new methods for commercial fishing for three months. However, since it required a large capital outlay, commercial fishing in Pak Phanang did not take off until 1972 (Boonchuwong, 1995). A joint Thai-German Government initiative in the early 1960s brought trawl technology from the Philippines to Thailand and was highly supported by Thai government (Morgan & Staples, 2006). Infrastructure relating to the fishing industry, such as landings, fish-meal factories, cold storages, ice factories, and shipyards were subsequently established (Boonchuwong, 1995). Although commercial fisheries expanded rapidly, most of the fishing boats eventually landed their catch in the Songkhla Province for various reasons. First, the shoaling of water channels in Pak Phanang Bay made its unnavigable for large commercial boats. Second, Songkhla was more convenient with its new government-subsidized port facilities as well as a road connected to

Penang in Malaysia, which was one of the biggest fish buyers in the region (S Boromthanarat, et al., 1991a). Third, the buyers in Songkhla offered better market prices than those in Pak Phanang (Kanklew, 1985). Therefore, although a few commercial fishers based in Pak Phanang were able to thrive, commercial fishery did not generate many employments and did not stimulate Pak Phanang's economy.

Between 1960 and 1970, the catch from Pak Phanang bottom trawler fisheries in the Gulf of Thailand increased nearly ten-fold and then remained relatively constant for the next twenty years. Eventually, the resource exhaustion from overexploitation drove commercial fishers to go further into international waters, causing them to bear an increase in fuel cost. During this time, Thailand imported about 84% of oil from Organization of the Petroleum Exporting Countries (OPEC) (Kanklew, 1985). The 1973 OPEC oil embargo lead to the global oil crisis which struck the Pak Phanang economy once again, severely affecting the commercial fisheries. Subsequently, the promulgation of the established Exclusive Economic Zones (EEZ) in 1981 resulted in Thailand losing about 768,000 km^2 of its fishing grounds (Vandergeest, et al., 1999), eventually put an end to the boom of commercial fishing in Pak Phanang. Again, the people in Pak Phanang suffered an economic decline. By the 1980s, Nakhon Si Thammarat Province was identified as "one of the most economically depressed areas in Thailand," with high unemployment and crime rates (S Boromthanarat, et al., 1991a, p.57). The once busiest port in the south was nearly abandoned and half of its commercial fishing fleet moved to Songkhla (S Boromthanarat, et al., 1991a).

In 1995, the plan by the Royal Irrigation Department to manage irrigation system in Pak Phanang Watershed was approved by the Cabinet. The main goal of the project was to prevent saltwater intrusion into the agricultural areas along the river by constructing water gates in

various locations. The operation of water gates turned out to alter the amount and period of water flow into and out of the Pak Phanang Bay and River. The extent of the negative impacts is considerable exacerbating the depressed condition of Pak Phanang (Pipop Prabnarong & Kaewrat, 2011).

Shrimp Farming.

The intensive shrimp farming industry in the Inner Gulf of Thailand suffered from a production crash due to disease outbreak at the end of the 1980s. Subsequently, shrimp farming moved to the eastern part of the Gulf, in areas such as Chanthaburi and Trad, and to the southern part of the Gulf (Patmasiriwat, 1999). In the south, Nakhon Sri Thammarat and Songkhla have the highest numbers of shrimp farms (DOF, 2017). Shrimp farms in Nakhon Sri Thammarat were densely located on the east coast, particularly in the Pak Phanang and Hua Sai districts.

In 1974, the Department of Fisheries (DOF), supported by the World Bank and ADB, began promoting shrimp farming in Pak Phanang. This marked the beginning of the "gold rush" of intensive shrimp farming in the area (S Boromthanarat, et al., 1991a). The DOF assisted the establishment of a shrimp farming cooperative in Pak Nakhon to help set up 134 shrimp ponds in one year. In the next two years, the number of shrimp farm owners increased 10 fold in the Pak Phanang District (S Boromthanarat, et al., 1991a). Large corporations and the Thai government also invested substantially in shrimp pond construction, as well as in building the industry's infrastructure that include shrimp feed mills, shrimp post-larvae hatcheries, cold storages, and roads for transportation of harvest and feed supply. By 1990, there were 1,541 shrimp farms in Pak Phanang, utilizing 21 km^2 of land. Extensive shrimp farming was used in only four farms encompassing a total land area of 0.2 km^2. The semi-intensive method was used by 30 farmers on 3.2 km^2 pond area. The rest or 1,507 farms used the intensive method on 17 km^2 pond area.

The boom in shrimp farming caused land prices in Pak Phanang to increase 1000 times, from USD $50-75 per ha in 1985 to $50,000-75,000 per ha in 1991 (Rönnbäck, 2001). By 1995, shrimp farming was present in almost every sub-district of Pak Phanang (Boonchuwong, 1995). Although there is no detailed record about the areas of mangrove loss to convert to shrimp farms, the maps of land use change (see Figure 4.4) provides a general idea of the extent of a decrease in mangrove and an increase in shrimp farm areas in 1974, 1995, 2003.

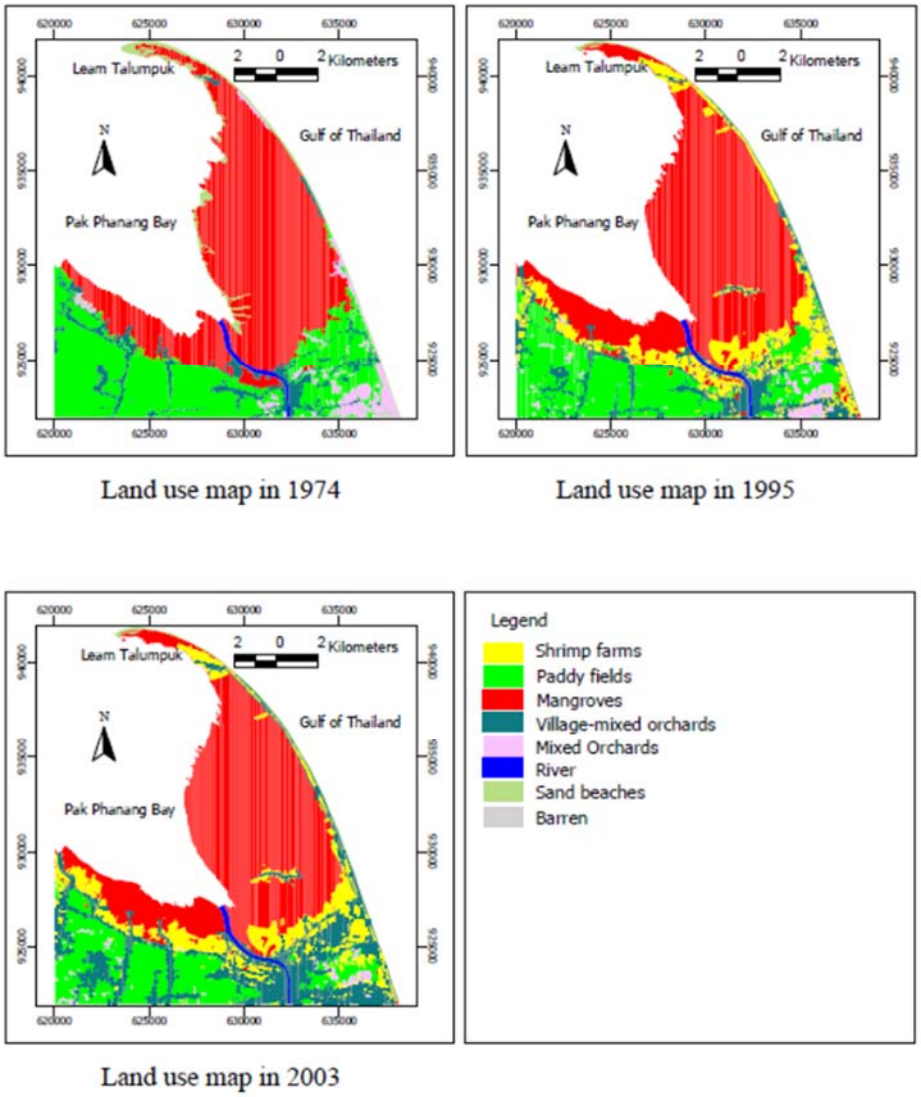

Figure 4.2 Land use changes in Pak Phanang Bay in 1974, 1995, and 2003 show an increase in shrimp farm areas (in yellow) and a decrease in mangrove areas (in red). (Source:Prabnarong, P. & Thongkao, S., 2006)

Unfortunately, in 1996 shrimp farmers in Pak Phanang faced the same destiny as those in the Inner Gulf. Disease outbreak and pollution struck after only 4 – 5 crop cycles, causing many small-scale farmers to be bankrupted and debt-ridden. Consequently, many small farmers and landowners were forced to sell their farms and land to big shrimp farmers and companies, most prominently Charoen Pokphand (CP). The land market began to develop in Pak Phanang following the shrimp production crash in 1996 and the Asian Financial Crisis in 1997, allowing big shrimp farmers and companies to buy land from small farmers and landowners and consolidate their operations. Since then, the land value has continued to go up, enticing even more landowners to sell their land, especially rice farms that are located adjacent to shrimp farming areas. The saltwater intrusion had degraded the quality of these lands for growing rice, so converting them to shrimp ponds was a logical step. For those who were indebted or unable to finance shrimp farming selling their land became the only option (Rönnbäck, 2001). In 2010, there were 501 intensive shrimp farms left in Pak Phanang, five of which belonged to CP, but accounting for 28% of the total shrimp farm areas in Pak Phanang (Department of Fisheries, 2012). During the boom period, shrimp farming imposed long lasting negative environmental and ecological impacts locally, including mangrove destruction.

Laem Talumphuk

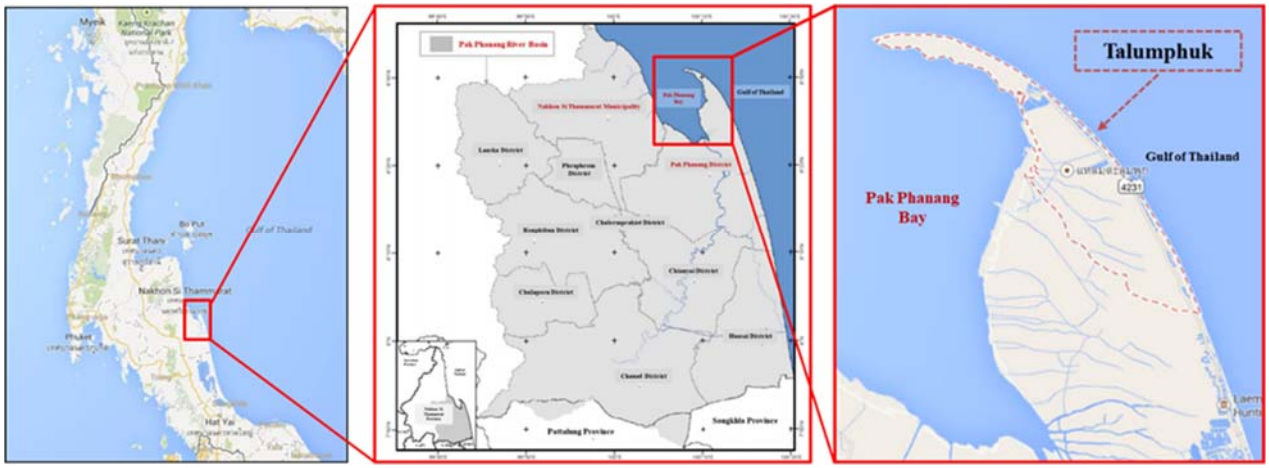

Figure 4.3 Map of Talumphuk. (Sources: Google Map; Thongkao & Putthong, 2008)

Laem (cape) Talumphuk (hereafter Talumphuk) is a subdistrict in the Pak Phanang District in the Nakhon Sri Thammarat Province. Talumphuk is located towards the end of a cape, connected to the mainland via the Eastern Pak Phanang Subdistrict. The cape is a relatively remote area as it is surrounded by Pak Phanang Bay on the west and the Gulf of Thailand on the east. The closest main town to Talumphuk is Pak Phanang Municipality, which is around 30 - 40 km away. Talumphuk is located in a mangrove swamp. Most of the land in Talumphuk is a protected area governed by both the Department of Marine and Coastal Resources (DMCR) for the mangrove forest and the Department of National Parks, Wildlife and Plant Conservation (DNP) as the Wildlife Non-Hunting Area. The smallest area is the settlement, which consists of houses that are very closely packed together.

Talumphuk used to be one of the more prosperous subdistricts in the Pak Phanang region. The population consists of several ethnicities, including Thai, Chinese immigrants, Thai-Chinese, and Thai-Malay. Most Thai-Malay were seasonal fishers who came from as far as Pattani Province. They came by train, carried their nets with them and built temporary huts from Nipa Palm along the beach. The first group of Chinese immigrants were rice mill workers in Pak

Phanang. They later married local Thai women in Pak Phanang and settled there. Therefore, Pak Phanang municipality has a large community of ethnic Chinese or Thai-Chinese. Later, some of them moved from Pak Phanang to Talumphuk to find jobs in fisheries and in harvesting mangrove timber for charcoal. Some became entrepreneurs or "Tao Kae", which is a borrowed word from Chinese Teochew dialect (the majority of Chinese immigrants in Thailand) meaning "business owner," "master," "boss," or "capitalist." In Talumphuk they opened dried shrimp factories, jewelry shops, theatres, grocery stores, or became middlemen to trade seafood. They have connections with their Chinese relatives outside of Talumphuk which were very beneficial.

Village	No. of Households (in 2015)
1	353
2 and 3	190

Village 1 (Plaisai)

Village 2 and 3 (Banlaem)

Figure 4.4 Map of Plaisai and Banlaem and numbers of households in each village. (Source: Google Map)

Administratively, a subdistrict consists of at least four villages, so the residential area in Talumphuk was divided into four villages including Village 1 or Ban Plaisai (hereafter Plaisai), Village 2 and 3 (Banlaem), and Village 4. Village 4 was settled by a Muslim majority but has not been inhabited since 1962. Village 2 and 3 are located next to each other to form one locality, Banlaem, but are designated as two separate village administrations. In 2015, Talumphuk had a total population of 1,147 within 543 households. 673 people lived in 353 households in Plaisai, the main village of Talumphuk (Community Development Department, 2017). There is no post office, bank, hospital, and ATM machine in Talumphuk. There are two small schools in each village and a local health service in Plaisai.

The subdistrict is governed simultaneously by both traditional and formal administration. In the traditional form, a "tambon" is led by a subdistrict chief (Kamnan), and each village is led by a village chief. In Plaisai, the Kamnan also acts as a village chief. In Banlaem, village chiefs have almost no power since they are under the more powerful Kamnan. Since the decentralization policy in 1995, tambons are governed by Subdistrict Administrative Organizations (SAO) headed by the Chief Executive of the SAO (Nayok). The roles of the Kamnan has been largely reduced, leaving the Kamnan and the Nayok of SAO to have different responsibilities and duties. However, their conflicting power is still a source of widespread social conflict.

SAO is divided into two branches: an administrative branch led by an administrative organization president, and the legislative branch led by an administrative organization council. Both the president and the council are elected directly by local citizens every three years. SAO is the main unit that receives the budget from central government to manage and use in the

subdistrict, particularly in infrastructure development projects. These projects are notorious areas of corruption for local politicians and local elites, including in Talumphuk.

Being elected as a Nayok for SAO results in the power to control the budget for the Subdistrict. For this reason, the election tends to be a fierce battle. Conflicts among villagers persist even after the election and escalates further every time an election is approaching. The community has become extremely fractured, particularly in Plaisai, which was confirmed by all the interviewees. SAO, which was established as part of the decentralization policy to improve the lives of the villagers, has become the source of many problems. The chronic turmoil from the conflict has undermined the traditional social safety net in many ways, turning relatives into enemies. The old ways of helping each other through bad times have been diminished.

Recovery from the Storm.

In the aftermath of the devastated storm Harriet in 1962, the Department of Public Welfare proposed that if any families wished to relocate, the government would provide lands in Yala Province for them. Many villagers accepted the offer and moved to Yala, but more than 80% returned to Talumphuk after a few months for various reasons. First, the lands allotted by the government were already occupied (*de facto*) by local people in that area even though they did not hold any formal land title (*de jure*), causing conflicts between the Talumphuk villagers and the local people. Second, it was assumed that Talumphuk's villagers would farm upon arrival in Yala. The problem was that the villagers didn't have any means of farming including equipment, seeds, fertilizers, etc. Additionally, the Talumphuk villagers were fishers and thus didn't have any farming knowledge or skills.

The initial recovery in Talumphuk focused on rebuilding the houses. However, the villagers faced other problems including a lack of fishing gear or boats, and they didn't have any

money to buy them. The Tao Kaes, who had connections elsewhere, brought in capital to run money-lending operations for villagers to re-build fishing boats and gear, while charging high interest. They provided loans on the condition that fishermen sell them the catch below market price. This exploitative practice has continued until today. Although the storm was a natural occurrence, the inability of some people to recover from the devastation was another story. Many who had lost all their life savings during the storm took more than 10 years to recover. Others have said that they have never recovered from the devastation.

The storm not only brought social changes, but it also brought changes to the physical landscape. Like the Pak Phanang region, Talumphuk bay became much shallower because the storm brought sediments from river runoff, and the storm surges brought sediments from the open-sea. The new sediment settled in the bay and coastal waters and smothered benthic animals. Since the storm, mangrove forests gradually expanded out into the bay, eventually forming a mangrove ecosystem, until intensive shrimp farming development arrived in Pak Phanang. The sedimentation added land area to the beach near Plaisai that was suitable for more housing settlements, while the beach in Banlaem has suffered from severe erosion since the storm. This is due to the south-to-north direction of the current during annual storm season that results in erosion from the beach in the south and accretion at the tip of the cape. Although during the dry season the current is switched to the opposite direction, the current is much weaker. The combination of beach erosion and mangrove forest enclosure has left little room to expand for new housing construction in Banlaem.

Today Talumphuk is known as a place that was previously devastated by a storm. It is the place where government and non-governmental organizations would go to with humanitarian assistance. With help from the military, an early warning and evacuation system has been in

place after 1962. Other forms of help include the distribution of instant food and clothes in what is popularly called a survival bag. It has become a tradition that every year, regardless of storm occurrence, that there must be a distribution of survival bags by many organizations such as the Thai Red Cross, Royal members through military officials, and local humanitarian organizations. Distributing survival bags has become even more popular these days with an increase in media coverage. It can be an easy way to get create a good image during the storm season. However, vulnerability does not only occur during the storms or hazards, it happens in their everyday lives (Ribot, 2010).

More importantly, the storm brought with it another wave of change which occurred after Kukrit became a Prime Minister and initiated the nationwide "Ngern Pun Project" in 1975. This project is considered the origin of the populist policy in modern Thai politics. The results of this project were the development of rural infrastructure including the construction of rural roads and canals. Although the main purpose of the Ngern Pun Project was to assist rural farmers, Talumphuk was included into this project since it was a part of the storm recovery efforts. In turn, the construction of the road connecting Talumphuk to the Pak Phanang municipality served to facilitate shrimp farming development in Talumphuk. By 1987, shrimp farming had expanded to Talumphuk.

Livelihoods in Talumphuk.

In Talumphuk, as with many other rural coastal communities, almost all villagers do not have formal land rights. Since villagers lived in Talumphuk prior to the promulgation of mangrove forest protection law, they were allowed to stay in their already crowded spaces, enclosed by recently established mangrove forest protected areas. As a result, they were without any room to spare for movement or improvement. Prior to the shrimp farming boom, coastal

lands did not have much value and most villagers occupied or settled on the public land. Others built their houses on their relatives' or acquaintance's land with the land owner's consent. However, after the shrimp farming boom, the value of coastal lands has increased exponentially. The few landowners, including local elites and absentees from Pak Phanang, asked for their land back either to sell or to grow shrimps themselves, leaving many to become land/homeless until today. In addition to the increasing homelessness among the villagers is a deterioration of the community norms which had been perpetuated for generations. Such norms and social ties have served as social safety net in difficult times and integral to the livelihoods of villagers, including those who are the most marginalized.

Most local elites who have formal land ownership are descendants of former powerful Kamnans and their relatives, as well as some elites from Pak Phanang. These local elites acquired formal land titles through their connections with Pak Phanang District land registration officials before the area was protected by law at the very beginning of shrimp farming boom. Most of this land was covered with mangrove forest, which was later converted to shrimp farms. At present, most former shrimp farms are abandoned or rented out by villagers as natural fishponds. Only nine farms are left that are currently in operation, one of which is Plaisai and is owned by the current Kamnan. The rest are in Banlaem where one is owned by a descendant of former Kamnan and the rest are owned by Pak Phanang shrimp farming companies.

During the 1980s, a group of around 10 villager households in Banlaem whose houses were washed away by beach erosion relocated to rebuild their small houses on a small area of mangrove forest along the main road. Although they had conflicts with the DNP officials, they were eventually allowed to stay since the mangrove protected area had not established by then. Since beach erosion is an ongoing process and has gotten even more severe recently, many more

houses have been washed away or devastated and now there was nowhere else they can rebuild their houses without encroaching into the mangrove protected area, which is prohibited by the DMCR. Until present, a request from the villagers who lost their houses and land to relocate into a small mangrove area has never been granted by the DMCR. Currently, some of the affected villagers still live in a public meeting hall, while others built their houses within the already tight space of their relatives' land.

Fishery.

Virtually all the households in Talumphuk have their livelihoods tied to small-scale fisheries. Fishermen use diverse fishing gears and techniques, including push nets, beach seine, lift nets, gill nets, trawl nets, surrounding nets, fixed set bag nets with and without wings, cast nets, and crab lift nets. The boats to fish in the open sea and the bay also differ in size and motor capacity. The most expensive kind of boats are the open sea boats.

The most valuable fishery product in Talumphuk is Banana shrimp caught in the open sea. This can only be caught during the storm season from November to February. To catch Banana shrimp, a fisherman must have access to an open-sea boat. Most open-sea boat owners borrow money to buy their boats from the four to five big Tao Kaes in the villages who give loans and credit to their patrons to build boats, buy fishing gear and ice, as well as giving advanced payments for buying necessities during difficult times. Most Tao Kaes are also middlemen and buy catch both from their patrons and others.

Open sea fishing requires around 2-3 people to work on the boat. Villagers who do not own the boat can be hired as workers. The workers get a share of the catch which is usually about 20-25% of the catch total value minus the fuel cost from each fishing trip. Boat owners

may or may not work on the boat, so the owners take 40-50% and may get an additional 20-25% for their own labor wage if they also work on the boat.

Owning a boat does not confer much of an advantage, so many former boat owners sold their boats and fishing gear to become workers instead. Most boat owners took a loan from Tao Kae when they bought their boats and fishing gear. As a condition of their loans, they often had to sell their catch to the Tao Kae below a fair market price. Owning boats and fishing gears requires high maintenance cost, so many boat owners must continue to borrow more money from Tao Kae and continue to be indebted for more than 20 years. In addition, they may need to borrow money from other moneylenders to pay for household expense during times of adversity caused by bad weather or illness. In such situations, boat owners may also lend money to their workers.

People who own larger boats for open sea fishing may occasionally catch a lot of high value shrimps at once and earn around THB 20,000 – 100,000 from one trip. However, that kind of catch is part luck, and part the result of good equipment and skills. For good equipment, they need access to capital or good credit. Even with good gear, the window of time to catch high value shrimp is very narrow, which is on a rare calm day during the storm season around December and January. Thus, the seemingly large income from one fishing trip may not be enough to subsist on during the season which may last more than three months, if they cannot catch anything else.

Those who do not have good credit to borrow from Tao Kae, and those who need money for things other than buying boats and fishing gear must resort to borrowing from local moneylenders both in the village and in Pak Phanang. These moneylenders are better known as loan sharks, since they charge extremely high interest rates (about 30-70%). Almost all my

informants have borrowed from these loan sharks at least once, and many still owe them money at the time of the research. The loan sharks do not use violence or illegal means to threaten borrowers. Instead, they use extreme public shaming and scolding. These methods are surprisingly very effective. Since these loan sharks can make a lot of money from villagers, many people in the village have themselves turned to being loan sharks as their primary or secondary job. Some people with good credit would borrow money from Tao Kae to lend to others and collect higher interest than the rate they borrowed. Among the borrowers, some would borrow to sustain their basic needs during bad weather. Others would borrow to spend on non-essential consumer items just to show off, and yet others borrow because they are addicted to borrowing money. Gambling is a big problem in Talumphuk, so another group of borrowers is gamblers. Almost everybody I met in the villages participates in at least one kind of gambling, usually the illegal lottery.

There are also smaller boat owners who only fish in Pak Phanang Bay. This group of fishers do not get as much money in each trip as those who fish in the open sea, but get a more consistent income because they can fish year-round. They usually do not hire workers; therefore, the boat owners get all the money they earn. Some fishers who do not have their own boats may ask for a boat ride with their friends, acquaintances, or relatives and share the cost of gas. However, the money they make from each trip is usually just enough for one or two days in their households, with a bit spare to buy gas and snacks for the next fishing trip.

Another group of fishers, consisting of about 10 households specialize in krill fishing in the bay using a special type of push net. The krill is used to make shrimp paste, an important ingredient in many kinds of Thai food. Some of these households also make the shrimp paste themselves, but the majority of the krill is sold to middlemen from Pak Phanang, Pak Nakhon, or

even from other provinces who come to pick up the catch from their docks. Some fishers take their boats to sell their catch in Pak Nakhon themselves. This type of fishing requires special kinds of fishing gear and techniques which is one of the reasons why only ten households have done this for generations. However, the primary reason is that krill fishing is a more toilsome undertaking than the already backbreaking regular fishing activities. The fishers leave their docks at 3 pm and finish fishing around 3 – 6 am the next day. Those who sell their catch themselves then have to continue to Pak Nakhon before coming back home at 8 - 10 am. Similar to the open sea boat owners, krill boat owners must also deal with unpredictable natural fluctuations and a narrow fishing season, which can leave boat owners not catching anything for many months in a year whilst they still have to maintain their boats. Most of them thus diversify their fishing gear to catch something else.

Figure 4.5 Krill caught by push net ready to be picked up by the buyers.

Many fishers do not own a boat. They can only afford simple fishing gear such as crab lift nets, crab traps, a hook to catch crabs, and small cast nets. Many use their hands to collect clams in the bay by sitting on the wooden board on the mud and use their bare feet to move

forwards or backwards. They may walk through the mangrove forest or may pay their friends to tag along for a boat ride to the bay. Some may own very small boats which are just enough to go out in the bay but close to the shore. This group often own simple but diverse fishing gear to catch a wide range of aquatic animals in the bay such as fish, crabs, clams, and squids. The most popular type of fishing for those who don't have enough money to buy a boat and net is with a double-sided mud crab lift net with wooden poles. Many teenagers and poor villagers would buy a few or make their own gear and walk to mangrove canals to set the traps and go back to collect their catch in a few hours. Mud crabs are a relatively high value catch. However, fishers can only catch very few crabs at a time. They may earn about THB 200 – 800 each day. Another sub-group is composed of hired workers, mostly working in cottage industries such as removing crabmeat, shelling oysters, or preparing fish for making dried fish. This group earn barely enough for day to day expenses in their households, ranging from THB 150 – 300 a day. Therefore, on days they can't catch anything or when they get sick, they need to borrow money from loan sharks. Unsurprisingly, this group consists of the greatest proportion of loan shark borrowers since they have no credit to borrow from other sources. Some borrow from more than 10 loan sharks at one time and get caught in the vicious cycle of working just to pay interest every day.

Another group who may not have fishing boat but may have special skills can earn more money than the last group. These fishers include oyster collectors who know how to dive with simple diving gear they make, fishing net makers and repairers, and mangrove crab catchers using hooks or special devices they made.

Figure 4.6 Mud crab lift nets and mangrove crab trap.

Figure 4.7 Villagers harvest clams by hands.

Figure 4.8 Villagers using gill net to catch fish in the bay (left) and from the beach (right).

About one third of women in Talumphuk are also fishers. Most of them accompany their husbands to fish mostly in the Bay but a few also go to the open sea. The rest are homemakers, storekeepers, food sellers, or wage laborers. The fisher women also have to perform housework

such as cooking, washing clothes, and taking care of the children. Women's role as fishers, apart from having extra duties of performing household chores, are pretty similar to fisher men.

Resource Degradation.

Resource degradation is a serious issue for the villagers for many reasons. First, the destruction of mangrove forest for shrimp farming during the shrimp farm booming period about 20 – 30 years ago, coupled with the environmental and ecological effects from shrimp farming, permanently altered the physical landscape of Talumphuk beyond repair. Although there have been efforts to "repair," their execution exacerbated the problems, causing even more serious consequences. Another cause of resource degradation is from sludge that overflowed or was discharged from the shrimp farms. Although there are few currently operating shrimp farms in the Talumphuk Subdistrict, there are many farms in the neighboring subdistricts and surrounding areas. The lingering effects from previous shrimp farming practices in Talumphuk as well as the current impacts from the surrounding farms continue to degrade the environments. The sludge from shrimp farms is discharged into canals which are all connected. At some points or during some seasons when the current is not strong enough for sludge to flow away, stagnant water pollutes the environment.

Another reason that resource degradation has become an issue is that for many years, illegal large boats with bottom trawlers or dredgers from outside have come into the village fishing area and taken everything with them. These bottom dredgers have widespread and devastating impacts to the marine environment both in the bay and out in the open sea because dredging doesn't only take target species, but also annihilates all benthic animals and ecosystems by disturbing, mixing, crushing and opening sediment surfaces. Animals are killed by being crushing by the dredge impact and smothered them with excessive sedimentation. Additionally,

toxic gas brought up from underneath the sediment surface creates a toxic environment for benthic and pelagic animals.

Fishing in Talumphuk is unstable; in a month there are 15 days that are referred to “good water or living water” and another 15 days that are “bad water or dead water.” Good water is when the tidal range is higher which brings in more aquatic animals, while the other 15 days is when the water is stagnant, and fishers cannot catch much. Although a few informants argue that they can catch something on any day by diversifying their catch, the majority cannot do so for various reasons. Firstly, in order to diversify the catch, the fisher needs to have many types of fishing gear which, along with the gear maintenance costs, many fishers cannot afford. Secondly, each type of fishing requires special skills that not many fishers possess, especially younger fishers; one person may only know how to use one or two type of fishing gear. Therefore, the fishers who can diversify their catch must possess many fishing skills and have enough money to invest in various types of gear, which is a situation uncommon for the poor fishers. Furthermore, having a boat increases the chances of catching more animals. In some seasons, the kinds of animals that can be caught by walking in the canals are very difficult to find. Thus, it is obvious that the group who gets the most income accumulation is Tao Kae, while the poorest group barely earn enough to get through each day.

Even though small-scale fishing is an extremely unstable and unpredictable occupation, many people choose to stay and take their chances rather than going to find labor jobs elsewhere. The most common reason was that they like to be their own boss. Since all the informants over the age of 40 have on average only an elementary school education, the only jobs they could find would be labor jobs earning the minimum wage. The minimum wage of THB 300 for Bangkok and surrounding areas was only promulgated in 2012 and is lower in other provinces (in 2016

was adjusted to THB 310 for Bangkok). In addition, if they move to find jobs elsewhere, they have to pay rent and buy all their food, whereas in Talumphuk they don't need to pay rent and can catch fish for household consumption. Even though they still have to buy other kinds of food, it is still cheaper and worth taking the chance to stay and fish.

On the other hand, some fishers in Talumphuk migrate seasonally to find jobs elsewhere. Because most middle-aged fishers have only an elementary-level education, many find wage labor jobs in the cities, whilst some go to find fishing jobs in other places. Some families moved to other fishing towns for many years but eventually came back to Talumphuk because they couldn't afford rent and other expenses. Many came back because they don't like to work as wage laborers, and they prefer to be their own boss in fisheries. All the informants said they don't want their children to work as fishers like them. They all want their kids to have better education and have better jobs somewhere else. Some parents even prohibit their kids from learning to fish or to getting on boats, because they are afraid their kids would not go to school if they knew how to fish. Most informants said that they want the fishing occupation to die with them. As a result, there are fewer numbers of lower-middle age villagers comparing to the number of older people or young children in the village. Many young children's parents live and work elsewhere while leaving their children for their grandparents to take care of.

Social Relation.

Older villagers remark that community relationships have changed from the past. Before the village had a water supply, people used to walk together and gather in the two public wells to take a bath or to wash their clothes. Villagers also used to gather in the 3-4 houses that owned a television. They used to share fishing products and exchange labor in many activities such as building houses, boats, or fishing gear. Reciprocity was a social norm, particularly during

important social functions such as ordinations ceremony, weddings, and funerals. Now the villagers spend a lot of money on these functions, which sometimes even cost some households their life savings. This is more common in the present day because the villagers are more competitive about showing off their socio-economic statuses. Previous social norms are now much weaker, particularly among younger generations. In the old days, the cash economy was not as extensive, and people could survive without having money. These days, villagers compete with one another, showing off their social status by buying material goods, which makes them vulnerable to the many loan sharks operating in Talumphuk. A few informants said this competition began when conflict occurred during the first SAO election.

Households without formal land ownership, boats, houses, or savings rely on social and family support and networks to sustain them. However, the erosion of social ties and changing social norms and values has weakened the social safety net. Many households/villagers have moved out from the village to find other opportunities. There has been unconfirmed speculation that Talumphuk will be gone in 50 years due to the erosion, but for the majority of the villagers this is not a troubling concern. Those who are middle-aged or older feel like it not going to happen in their lifetime. As for younger generations, they do not want to stay here anyway because there's no job opportunities for them here.

Most villagers in Talumphuk have low levels of education, and a lack of knowledge about financial management. The increased integration into the cash economy led to widespread consumerism with items such as on brand-name clothing, smartphones, flat-screen TVs, golden jewelries, and all kinds of gambling. Few aspire to play an active role in building their community. Disillusioned by the repeated patterns of corruption by political leaders and the local elite, they find participating in any political activities or any communal activities futile.

When comparing the two villages in Talumphuk, Banlaem villagers seem to be more cooperative and more creative than Plaisai villagers. Banlaem is smaller in size and population. It is further away from the Kamnan and SAO office and so it seems that the villagers are more removed from the political and social conflict occurring in Plaisai. For example, since 2002, Banlaem villagers worked together to initiate an artificial reef project to prevent illegal trawling activities and dredge boats from the outside to get into the 3 km perimeter of the village fishing ground. They also initiated other community-based projects and asked for support (financially and/or other forms of supports) from local Fisheries Department officials for things such as making floating shelters for fish larvae and establishing community laws.

In contrast, Plaisai villagers tend to think of such activities as the Kamnan's job. The extent of cooperation in Plaisai is far less than that in Banlaem. When the Kamnan calls for a village meeting very few people attend, most of whom are on Kamnan's side. During the last 20 years, many NGOs have come to Plaisai and Banlaem to initiate projects to help villagers gain alternative occupations such as teaching villagers to sew life jackets, setting up groups to make dried fish, creating packaging to increase product values, etc. These projects did not get the attention of the villagers and none of them remain in practice.

Many times, Plaisai villagers treat their resources as open-access. An example is the collection of small white clams that emerged after disappearing from Talumphuk for many years. When the news about the emergence of the clams spread, the whole mudflat in Plaisai was covered with villagers trying to collect as many clams as they could carry in their boats. Sadly, the Kamnan was the main middle person who bought all the clams collected by villagers. Within only three days, the clam sizes collected were getting smaller and eventually exhausted from the area again.

A few informants made reasonable explanations for why community ties are so different between two villages. Although Plaisai and Banlaem are located only 3 kms apart, their characteristics are markedly different, which can be partly attributed to their physical settings that result in differences in the livelihoods and culture. Plaisai is located on the inner part of the cape closer to the bay on the west while Banlaem is located on the outer part close to the shore on the open sea. Although there are canals connecting Banlaem into the bay, most Banlaem villagers fish in the open sea by launching and docking their boats from the beach. On the other hands, most villagers in Plaisai fish in the bay and mangrove canals, although there are numbers of villagers who fish in both the open sea and the bay, and a few who fish exclusively in the open sea.

Plaisai has one main road which branches into many small alleys. Most alleys lead from the main road into canals at the end, with houses located on both side of the alley. At the end of most alleys are small docks where villagers who live in that alley dock their boats and land their catch. On the other hand, most fishers in Banlaem launch and dock their boats on the beach. Since launching and docking the boats on the beach require at least 10 – 12 people for each boat, boat owners in Banlaem must dock their boats together in a group of about 8 – 10 boats per group. Every boat in a group must help each other dock and launch their boat until all the boats in their group are done with docking or launching before they can leave to do their own business. When the first boat of the group arrives at the shore, villagers in other groups or any villagers who are around will also help out. The reciprocity of helping each other in launching and docking their boats is also transferred to other aspects of villagers in Banlaem.

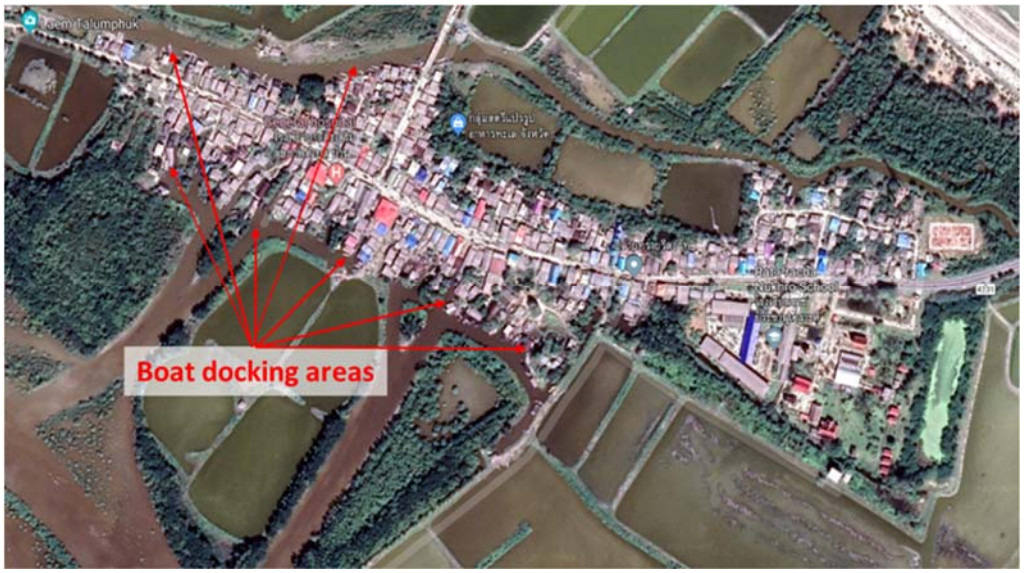

Figure 4.9 Plaisai Village (Source: Google map)

Figure 4.10 Banlaem Village (Source: Google map)

All the informants including the Plaisai villagers shared the thought that villagers in Banlaem are much more cooperative and united than the villagers in Plaisai. In addition to the geography that may influence the socio-cultural characteristics between the two villages, being

further away from governing center makes Banlaem act like a self-governed community. From my observations, besides the typical hierarchy of Thai society such as between younger and older people, almost all Banlaem villagers have a comparable socio-economic status. Therefore, Banlaem villagers are comfortable participating in decision making processes among themselves, particularly when it comes to making rules about their natural resources. They are not afraid to raise creative ideas and brainstorm among themselves, which eventually resulted in many projects to protect their resources which have been mentioned previously. In addition, they asked for and received the support from the government sectors, particularly from the Department of Fisheries.

On the other hand, Plaisai villagers feel that they must respect the Kamnan and SAO's Nayok and feel uncomfortable voicing their genuine thoughts in front of their leaders. Many villagers think that they should not have anything to do with the rule making because it is Kamnan's responsibilities. Most Plaisai villagers also think that monitoring and enforcing the rules are Kamnan's jobs. In contrast, Banlaem villagers must monitor and enforce graduated sanctions among themselves, since they feel they are being neglected by the leaders and thus must take action themselves. Although it seems that the open sea, which is the fishing grounds of Banlaem villagers, would be more difficult to have a clearly defined boundary, in fact, Banlaem villagers created their fishing boundary by installing artificial reefs to prevent outside destructive fishing boats from entering their fishing grounds. On the contrary, any fishers can enter the bay to fish including in illegal or destructive fishing boats. Without any consolidated monitoring measures in Plaisai except those who may or may not call Kamnan when they see illegal fishers, resource degradation in the bay has been a major problem for Plaisai villagers, particularly the poor.

Conclusion

This chapter describes the historical background of Pak Phanang and Talumphuk, as well as the background of the current situation and various issues faced by Talumphuk villagers, most of whom are small-scale fishers. The tropical storm Harriet is one of the major events that brought many changes to the landscape, socio-economic conditions, and social relations amongst residents of Pak Phanang and in particular Talumphuk. In addition, changes in national and local political economic conditions such as the transition from subsistence to market economy and the decentralization policy, coupled with the degradation of fishery resources, have put more pressure on the precarious livelihoods and social relations of Talumphuk fishers.

CHAPTER 5. MANGROVE TRANSFORMATION AND LIVELIHOODS IN TALUMPHUK

The shrimp farming boom brought major consequences to Pak Phanang and Talumphuk, including the destruction of mangrove ecosystems and the subsequent mangrove plantation projects. For many decades, the government granted logging concessions in mangrove forests, leading to their mass exploitation until logging was banned in 1996. Additionally, shrimp farming was a major culprit for the rapid mangrove destruction. Once amongst the most abundant ecosystem in the area, the mangrove forest in Pak Phanang Bay became the second most rapidly degraded mangrove forest in the country after Chantaburi's mangrove forest. Between 1961 and 1996, the mangrove forest in Pak Phanang Bay decreased to only 12% of what it was (Wongchinnawit, Paphawasit, Siwayaphram, & Songroop, 2007).

Mangrove Planting Initiatives

Although restoration of degraded mangrove in Thailand can be dated back to the 1960s, it wasn't until the 1980s after the rise of the environmental movement that the initiatives have become more materialized (Memon & Chandio, 2011). In 1982, the Royal Forest Department (RFD) began to consider mangrove reforestation in degraded mangrove areas, particularly in abandoned shrimp farms (Siriboon, 2004). In 1987, the RFD was assigned to carry out the restoration of about 21,000 ha of degraded mangrove, as well as the afforestation of new mudflats to increase the mangrove forest areas. In 1991, the Cabinet approved a large-scale mangrove restoration program with the overall budget of USD 30 million. The program aimed to plant about 40,000 ha of mangrove areas between 1991 – 1996. Consequently, four stations for mangrove seedling production were established in Trat, Phangnga, Satun, and Nakhon Si Thammarat Provinces. By 1996; however, the program was only achieved 35% of the target

(Memon & Chandio, 2011). As a result, Thai government came up with a new project in 1996, the Green Carpet Project in Nakhon Si Thammarat. The project sought to manage mangrove forests in a partnership, in which communities were tasked to restore, take care, conserve, and develop the mangrove forests. In return, the communities received the rights to access the forests under the conditions stipulated and agreed to by the state (Siriboon, 2004). The project was led by the Department of National Parks, Wildlife and Plant Conservation (DNP) and Thailand Environment Institute (TEI). The project was funded by the KEIDANREN Nature Conservation Fund (Japan), and the Japan Fund for Environment Conservation, in collaboration the Thai Union for Mangrove Rehabilitation and Conservation and the Research Association for Global Mangrove (Osbeck, et al., 2012; Siriboon, 2004). Other collaborators were the RFD who provided seedling procurement and technical knowledge, and universities such as the Faculty of Forestry, Kasetsart University, and the Faculty of Science and College of Population Studies, Chulalongkorn University to conduct researches on silviculture and social science (Siriboon, 2004).

Although the aim of the project was to replant about 1,000 ha of abandoned shrimp ponds in Nakhon Si Thammarat Province, it turned out that in practice the DMCR chose new emerging mudflats to plant mangrove to avoid conflicts with local people related to land tenure rights (Osbeck, et al., 2012). *Rhizophora mucronata*, *Rhizophora apiculata*, *Ceriops tagal* and *Bruguira cylindrical* were used in the plantation but only *Rhizophora mucronate* and *Rhizophora apiculata* had the best growth rate and 75-90% survival rate (Amarasinghe, Dulyapurk, Taparhudee, Yoonpundh, & Jumnongsong, 2009). Areas of mangrove planted on former shrimp farms increased from 2.24 km^2 in 2002 to 4.8 km^2 in 2006. Since the planted trees were still too premature to show signs of negative impacts, the first stage of the project seemed like a success

and was well-received by local villagers. As a result, the project was extended from 5 years to 10 years (Suganan, 2007). Figure 5.1 below shows the areas of mangrove plantations from the Green Carpet Project. Since the aim of the project was to restore abandoned shrimp farms, the inner Talumphuk did not include into the project because there was no shrimp farm toward the tip of the cape as it is designated as Wildlife Non-Hunting Area. In addition, there is no publicly accessible record of the numbers of mangrove planted areas only in Talumphuk since the mangrove forest is covered the areas of many subdistricts.

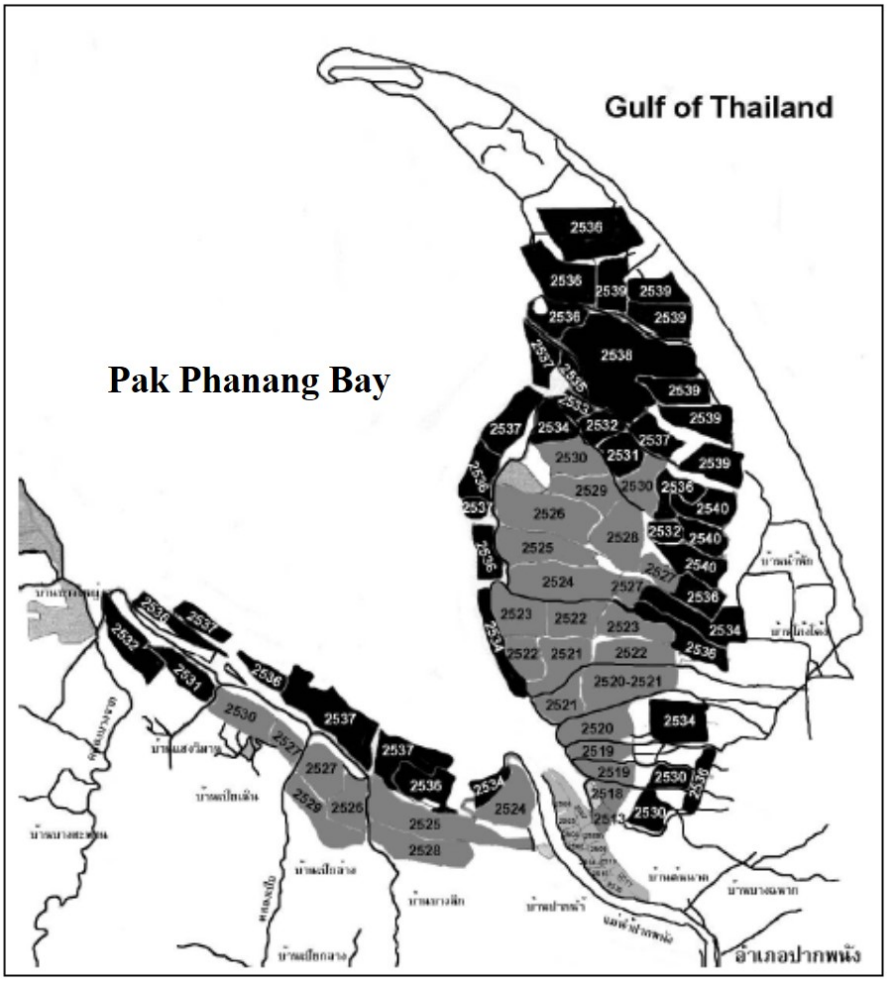

Figure 5.1 Areas of Mangrove Plantations from the Green Carpet Project between 1991 and 2007. (Paphawasit, Siribun, Piamsombun, Sochisuporn, & Siwayaphram, 2008)

Year	Areas of mangrove plantations (ha)	Location of mangrove plantations
1991	112	Muang District
1992	104	Muang and Pak Phanang District
1993	320	Pak Phanang District
1994	400	Pak Phanang and Khanom District
1995	272	Pak Phanang and Khanom District
1996	315.2	Pak Phanang District
1997 - 2007	1000	Muang and Pak Phanang District (Only from the Green Carpet Project)

Figure 5.2 Numbers of areas of mangrove plantations between 1991 and 2007. (Paphawasit, et al., 2008)

In 2002, government organizations including the National Research Council of Thailand, the Ministry of Education, the former Ministry of Agriculture and Cooperatives, as well as the Ministry of Interior, partnered to foster an "environmental consciousness" and provide systematic training to community leaders, teachers, and students. They also aimed to create opportunities for youths to participate in the conservation and restoration of mangrove forests. The government claimed that the project was a success based on the fact that the areas of mangrove forest had increased. Subsequently, the Department of Marine and Coastal Resources (DMCR) continued the mangrove forest management plan including mainly planting and protecting of mangrove (Aksornkoae et al., 2004).

Following the mangrove management agenda, the DMCR hired a few villagers both in Talumphuk and in the neighboring subdistrict for the following tasks: first, to cut down existing mangrove trees to clear space; second, to replant both propagules and seedlings of *Rhizophora mucronata* or Loop-root mangrove provided by the DMCR; and third, to continue collecting

propagules of the planted Big-leaf Kongkang and nurse the seedlings. Cutting down the multi-species forest to plant mono-species of Big-leaf Kongkang created numerous problems for both the ecosystem and the livelihoods of villagers. Since the planting was done in plots mostly by hired villagers during the first 5 years, followed by maintenance such as thinning and pruning by both the DMCR and hired villagers, there is no record of exact mangrove acreage change. In addition, since the site selection is mostly where it is easily visible such as on the canal banks according to the informants, it is unlikely that the actual number of planting areas are well recorded and kept.

The Ecology of Big-leaf Kongkang Plantation

Rhizophora mucronata belongs to family Rhizophoraceae and commonly known as the Looproot mangrove, Red mangrove and Asiatic mangrove (Batool, Ilyas, & Shahzad, 2014). *Rhizophora mucronata* is called Big-leaf Kongkang in Thai so I will refer to *Rhizophora mucronata* as Big-leaf Kongkang from here on.

Talumphuk was already covered with abundant and diverse mangrove forests. A survey of mangrove species in Pak Phanang prior to 1993 found that the most abundant mangrove species in Pak Phanang Bay is *Avicennia alba*, followed by *Sonneratia caseolaris* and, less abundant, *S. alba*, along with the occasional *Rhizophora apiculate* (Small-leaf Kongkang) (Aksornkoae, 1993; Osbeck, et al., 2012). Therefore, Big-leaf Kongkang is considered an introduced species to Talumphuk, corroborating with the information from Talumphuk villagers.

The informants whose livelihoods depend on fishing in the bay or in mangrove canals all shared the opinion that mangrove plantation was bad for them. They stressed that the problems stem from the Big-leaf Kongkang being the only species planted. The Big-leaf Kongkang monoculture negatively affects the ecology and consequently the livelihoods of fishers. First, as

the name indicates, the leaves of the Big-leaf Kongkang are larger and thicker than other mangrove tree species. When the leaves fall, it takes longer for them to decompose. The decomposition rate of leaf litter is influenced by various factors including the inundation regime. Mangrove in areas with restricted water flows can negatively affect the quality of water and the decomposition rate of leaf litter. Mangrove itself can exacerbate the condition by blocking channels resulting in limiting tidal flush (Allen, 1998). Since the Big-leaf Kongkang is not native to the area, it may mean that the biogeochemical and physical environmental characteristics of the area do not accommodate the decomposition of Big-leaf Kongkang leaves leading to the anoxic and hypoxic conditions of mangrove soil.

Anoxic condition occurs when oxygen movement into the soil is limited, which leads to bacterial aerobic respiration that rapidly depletes the soil oxygen. Thereafter, anaerobic activity takes over, creating the chemical reaction in soil that starts with the bacterial conversion of nitrate into gaseous nitrogen. Furthermore, iron is converted from insoluble ferric (Fe^{3+}) salts into soluble ferrous (Fe^{2+}) forms, which in excess can be toxic to plants and animals. Ultimately, when oxygen is acutely depleted, carbon dioxide is reduced to methane, and sulphate is reduced to toxic sulphide or hypoxic condition (Hogarth, 2015).

Big-leaf Kongkang itself can withstand such conditions because it has fast-growing massive aerial roots called “stilt roots”, which allow the Kongkang to receive adequate gas exchange. While the underground roots may permanently be in a hypoxic or even anoxic environment, they receive sufficient oxygen supply from the column roots. The column roots absorb oxygen from the air through numerous tiny superficial pores, or lenticels. The oxygen is then transferred to the underground roots via aerenchyma tissues, the honeycomb-shaped air

spaces running down the root axis. The stilt roots of Kongkang often cross with neighboring trees creating an almost impenetrable entanglement (Hogarth, 2015).

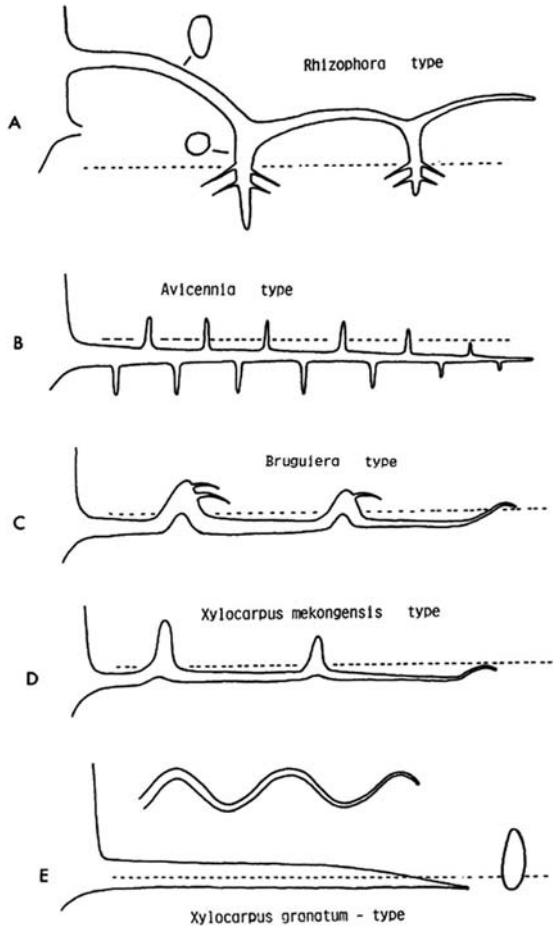

Figure 5.3 Different type of mangrove root structure. (Tomlinson, 2016)

Since the leaves of Big-leaf Kongkang are relatively heavy, they sink and accumulate onto the bottom of mangrove canals. In addition, the Kongkang trees colonize the canal banks rapidly due to their fast-growing stilt roots which expedite its accretion rate. The accumulation of Kongkang leaves on canal beds and the rapid accretion of canal banks make the canals shallower and narrower or may even close them off completely. This make fishers unable to fish in or navigate through many canals. Again, the fishers must travel further to take a detour to their fishing grounds or to go fishing elsewhere. Additionally, the stilt roots of Big-leaf Kongkang and the resulting compacted substrate are not suitable habitats for benthic animals. According to the

villagers, crabs naturally burrow under the roots of other mangrove species particularly *Avicennia spp.*, but not under the Big-leaf Kongkang roots. As a result of the Kongkang planting, the numbers of benthic animals have gone down dramatically, especially mud crabs and Sesarmid crabs which are the main livelihood source for some villagers. One villager further explained that, "the Kongkang roots grow too much and too fast and animals don't like to stay under Kongkang roots. If it's *Avicennia spp.* or *Sonneratia spp.*, it is fine because animals like to stay underneath their roots. Big-leaf Kongkang also make the surrounding soils compacted and uninhabitable for animals. Later, when the DMCR wanted to plant more Kongkang, people strongly opposed and complained to District and Provincial Heads. As a result, the District and Provincial Heads approved that the villagers could uproot newly planted seedlings and propagules that obstructed fishing activities."

Another informant who uses a special kind of stationary net to catch shrimp in the bay called '*Toong Yak*' added that, "the bay has become so much shallower because they planted Kongkang. I have to go out further to the sea because the bay has become shallower. In the past, our village had healthy mangroves which would grow and expand by themselves, we didn't need to plant them. But these days, they cut down those healthy trees and planted Kongkang. It created sediment accretion and water pollution from accumulated thick leaves. When water is polluted, we can't walk into the forest, we can't catch anything because animals cannot live there anymore. I have stopped catching shrimps with *Toong Yak* for about 4-5 years already because I couldn't catch anything. Big-leaf Kongkang is really bad especially during dry season when the fallen leaves accumulate on the ground and degrade very slowly which makes it smell really bad. Rainy season is better because the tidal flow brings those leaves away, but dry season is the worst." When I asked whether the government consulted with the villagers before they planted

the Kongkang, the answer is “No, never. They just came and planted them. Nobody can do anything because they (the DMCR staff) never told us anything.”

The information from the villagers corroborates with numbers of studies on mangrove elsewhere. Mangrove leaves contain as much as 40% of leachable materials contributing to dissolved organic matter. An increase in organic matter loading from fallen leaves consequently increases the sulphate reduction by anerobic bacteria in the sediment. Such hypoxia condition will in turn affect the abundance, diversity and distribution of the benthic and epibenthic fauna in mangrove. Macrobenthos are found in higher numbers in areas with less hypoxia conditions (Okamura et al., 2010). Allen also found that such conditions may contribute to the paucity of animal species (Allen, 1998).

Animals in mangrove forest, particularly leaf-consuming crabs, play vital roles in mangrove ecosystem. Sesame crabs (Sesarmidae) are the dominant group of mangrove fauna in Thailand (Paphawasit et al., 2004; Poovachiranon & Tantichodok, 1991). Its direct role is to contribute in the process of leaf degradation, which in turn affecting the biogeochemical and nutrient cycle of mangrove. Their burrowing activities also increase the oxygen availability in mangrove soil. It is also an important link in the food web in mangrove ecosystem (Ravichandran, Anthonisamy, Kannupandi, & Balasubramanian, 2007).

Sesarmid crabs, like most animals, have preference in their food species. Their selectivity of the type of mangrove leaf species results in the variable rates of leaf litter mineralization. An experiment to determine leaf choices of Sesarmid crabs was conducted by Ravichandran, et al. in Pichavararn mangrove in India. They offered 10, 20, 40, 60, 80, 90 and 100 days decomposed leaves of *Avicennia marina*, *Rhizophora mucronata* and *Acanthus ilicifolius* to Sesarmid crabs. The result shows that Sesarmid crabs preferred 40 day decomposed leaves of *Avicennia marina*

over the others. The selected leaves contained the C:N ratio of lower than 17. Too much decomposed leaves contain too high C:N ratio which have less nitrogen contents and are considered non-nutritious food for the crabs. With regards to species of choice, Sesarmid crabs preferred lower tannin content leaves species. In other words, Sesarmid crabs select leaves with higher protein and lower tannin contents, which can be found in partially decomposed *Avicennia marina* leaves. The study also confirms that leaves of *Rhizophora mucronata* contain lower protein and higher tannin content, contributing to unfavorable food conditions for Sesarmid crabs (Ravichandran, et al., 2007). Although the experiment is conducted in different sites with different controlling factors, the insight gained from such experiment is appreciably beneficial to understand why Talumphook villagers reported that crabs don't like to be around Big-leaf Kongkang and prefer to be around *Avicennia marina.* In other words, Big-leaf Kongkang does not only create the unfavorable habitats for animals but its leaf also contains high tannin contents that crabs don't like to eat.

The Big-leaf Kongkang plantation covers an area which expands into another subdistrict (Kong-Kong Subdistrict). I interviewed some villagers in the Kong-Kong Subdistrict, and they all agreed with villagers in Talumphuk that the fallen leaves of Kongkang causes problems. One of the villagers in this subdistrict was hired by the DMCR to nurse the Big-leaf Kongkang seedlings from collected propagules to distribute for plantation in many areas including Talumphuk. I was fortunate to get the opportunity to interview this person. To my surprise, he confirmed the other informants' statements about planting Kongkang as he is also a fisher himself. He also confirmed that the DMCR officials cut down the original mangrove trees or hired local people to do so to plant only Big-leaf Kong Kang trees in both the Kong-Kong Subdistrict and Talumphuk. In addition, he added that he did make suggestions about the

degraded area that was suitable for mangrove plantation, but his opinion was ignored by the DMCR since the area he suggested was not easily seen and was difficult to access.

Figure 5.4 A villager pointed to the narrowing canal due to the rapid colonization of Big-leaf Kongkang.

There was a study conducted during 1998 to 2002 and published in 2004 by a group of prominent scientists led by the most highly acclaimed mangrove forest expert in Thailand to determine the species with the best survival rates for mangrove plantation. The result found that the Big-leaf Kongkang (*Rhizophora mucronata*) had the best survival rate and low mortality rate (Aksornkoae, Teerathanathorn, & Panitchart, 2004). The results were taken from comparing the numbers of growth rates and survival rates to other researches conducted by various groups of researchers in different study sites. The study concluded that *Rhizophora mucronata* is the best species to be planted on new mudflats for increasing mangrove forest areas along the coastlines. This study has been used as a blueprint for mangrove planting practices by the RFD and DMCR until present. Another recommendation made by the same group of experts about how to choose the planting area, they suggested that the first choice as the best areas are new intertidal mudflats,

which was abundant throughout the coast of the Gulf of Thailand and Andaman Sea, in order to avoid conflicts with local communities (Aksornkoae, Wattayakorn, et al., 2004; Erftemeijer & Lewis, 1999).

Although Big-leaf Kongkang has been planted commercially since the period of timber harvest as it yields high quality charcoal, the planting of Kongkang has become a discursive practice of mangrove narratives. The aforementioned recommendations from scientific orthodoxy, coupled with the legacies of silvicultural knowledge carried by Thai foresters have helped facilitating the discursive practice of mangrove narratives.

Seedling of Big-leaf Kongkang is very easy to grow from propagules. It is also easily visible when propagules or seedlings were planted. It is important for any government activities to have photos to show their performance or the products of their jobs right away. Big-leaf Kongkang produce many large propagules, making them easy to be collected and planted. Although other species such as *Avicennia spp.* and *Sonneratia spp.* are spread and grown naturally more easily, but natural growing mangrove trees were not acceptable because it means that the DMCR don't get the budget. In addition, when the DMCR staff ignored the suggestions about more suitable sites to plant mangroves from villagers, it is because they want to plant mangrove in areas next to canals so that when tourists or their supervisors visit the sites, they can see their plantations easily. Furthermore, since the local DMCR is in need of a consistent supply of budget for mangrove plantation, when they ran out of forest space, they spent some of the budget on clear-felling older planted trees and planting the new ones. More importantly, the plantation is easier than natural forests for the DMCR staff to patrol and monitor for trespassers. The roots systems of Big-leaf Kongkang make it extremely hard for villagers to navigate through both by foot or by boat because the stilt roots are difficult to walk on and they close off most

small canals in the forest. As a result, the DMCR can complete their forest enclosure process using the help from Kongkang's entangled roots.

One of the mangrove narratives used to promote mangrove plantation by the Thai government and international organizations was that mangrove forest provide a multitude of resources 'for local use.' Evidently, in practice, mangrove trees planted by the government have become untouchable and forbidden without exceptions. After the Kongkang trees were planted, the plantation areas are demarcated and villagers are prohibited access through, or from collecting or harvesting anything. Although the DMCR staffs argued that "it is allowed for local use, just let us know." In fact, many villagers were arrested for collecting woods for subsistence use. One informant explained that "people can't and don't cut Kongkang trees because it's illegal and we'll get arrested. In the past, people cut mangrove trees to build their houses, but after they planted them people can't cut them anymore." Another old woman who was arrested added that "they don't care for what purpose we cut."

Similar to Talumphuk, a study conducted in India found that many plantation efforts that have been practiced for decades by the Indian government rarely paid attention to the ecology of the species being planted during 'restoration efforts' and very little science has been used in the formulation and implementation of policies governing the bioshield. Many hamlets, particularly local fishing communities have opposed, and even uprooted saplings of mangroves planted by the government. The main causes of this are coastal land rights and accessibility to the sea from the bioshield plantations (Mukherjee, Balakrishnan, & Shanker, 2009). According to another study, mangrove reforestation should be the last option to put into practice (Stevenson et al., 1999). Instead, altering the hydrology or soil characteristics to help facilitate the natural regeneration of mangroves is probably the most cost-effective and sustainable method to restore

a degraded mangrove site. Nevertheless, when afforestation is the only option, mixed plantation is recommended and monoculture should be avoided (Mukherjee, et al., 2009). More importantly, the perceptions and needs of local resource users should be taken into account when making the decisions about plantation and choice of species (Mukherjee, et al., 2009).

There are three villagers who are hired as local government staff. They were hired as temporary staff at the beginning of the Miyazawa Project in 1999, which was supported by a Japanese organization. After the project finished, they were hired permanently by the Forest Department. Their rationale for planting Kongkang was "because they (the DMCR) don't want land grabbers to take advantage of the degraded forest land, so the DMCR must plant mangrove trees everywhere, and Big-leaf Kongkang is the easiest species to plant." Another non-villager regional DMCR staff explained why villagers oppose the plantation, "villagers don't want us (DMCR) to plant Kongkang because they want the mangrove forest to remain degraded in order for them to be able to stake a claim on such degraded land. If the mangrove forest is healthy, it is considered protected area and people can't occupy it. For this, villagers got together to conspire for a scheme to try to oppose our Kongkang planting activities." The same staff also said that "the reason they plant Big-leaf Kongkang is because it is the pioneer species. After Kongkang is successfully colonized, other species will grow eventually." Based on my personal conversations with a scientist who is not affiliated with the DMCR, pioneering species should depend on the site-specific characteristics of the forest. A thorough study must be conducted to determine the appropriate pioneering species in a certain area. Based on the current knowledge this scientist has, Big-leaf Kongkang is not an appropriate pioneer species in Talumphuk. More importantly, mangrove forest in Talumphuk is persistently flooded throughout the year, which makes Big-leaf Kongkang an unsuitable species to plant. As mentioned in Chapter 3 (p.56), waterlogged

condition dramatically increases the anoxic and hypoxic conditions of mangrove soil, and decreases the decomposition rates of leaf litter.

Another problem with Kongkang plantation in Talumphuk is the question of whether it was an attempt is to restore the habitat or to convert it into a different type of habitat. Field distinguishes between ecosystem rehabilitation and restoration. The objective of ecosystem rehabilitation is to replace the ecosystem's structural and functional characteristics partially or fully, while restoration is to bring back the original conditions of the ecosystem (Field, 1999a, 1999b). The most important step; therefore, is to have clear objectives in order to prescribe the appropriate actions and methods. As for mangrove planting in Talumphuk, it seems that the rational for the projects was created by lumping all the benefits of all kinds of mangrove forest together, which is a product of mangrove narratives. Unsurprisingly, without clear objectives, the practice is done by getting back to the most familiar method for Thai foresters that is a silvicultural system.

In his global review, Ellison noted that mangrove restoration projects in Thailand only use one species for planting from the available twenty-five mangrove species (Ellison, 2000). Similarly, other studies found that the main objective of mangrove rehabilitation programs in Thailand has been the timber production and charcoal while the ecosystem rehabilitation has been on the background (Field, 1999a, 1999b; Memon & Chandio, 2011). This type of restoration effort is called "gardening" approach (Lewis III, 2011). Many claimed "successful plantations" are just the stands of selected monospecies. A very accurate remark was made by Memon and Chandio (2011) that, "at present, ample literature is available on the principles of ecological restoration, but unfortunately Thailand has yet to learn from such experiences as the

country seems to still perceive that mono species plantation as synonymous with the ecological restoration of mangrove areas" (Memon & Chandio, 2011, p.111).

In Talumphuk, Kongkang was also planted on a mudflat. This results in the conversion of a mudflat ecosystem into a mangrove ecosystem. After the DMCR ran out of space to plant new trees, they started to plant mangroves in the mudflat around the outskirts of the mangrove forest, encroaching into the bay. Mudflats are important habitats for many benthic animals which are the livelihood sources for villagers in Talumphuk. Intertidal mudflats are also important habitats for shorebird populations including migrating birds. They feed almost exclusively on benthic animals during the low tide. Planting mangroves on the mudflat thus not only destroys the habitat of intertidal benthic animals, but also limits and reduces the feeding grounds for many shorebirds and migratory birds, some of which are endangered (Erftemeijer & Lewis, 1999).

Healthy mangrove ecosystems are beneficial to coastal communities who have access to its resources. However, the key words here are "healthy ecosystems" and "accessible," of which Talumphuk doesn't have either. I want to stress that mangrove degradation is a real issue and scientific knowledge about mangroves is very important. Nevertheless, the mangrove narratives and its associated 'environmental orthodoxy science' when used uncritically and translated into policies and practices can do more harm to both ecosystems and people than good.

Many studies confirmed that the restoration of mangrove ecosystems requires a detailed site-specific understanding of the species-specific physiology and population biology, as well as knowledge of the interactions among various species of both plants and animals to determine their patterns of distribution and abundance (Ellison, 2000). Studies elsewhere show that monocultural plantation may not be sustainable in the long term and provide fewer ecosystem services. In addition, single species plantation will not only destroy the genetic, structural, and

functional diversity of mangrove ecosystems, but may also prevent colonization of other nonplanted mangrove species. Biodiversity in a forest system is essential in determining and influencing soil conditions as well as the population and community processes of plants and animals. Furthermore, many restoration efforts often move directly into the planting stage without any assessment of the suitability of the site for restoration activities or assessment of the socioeconomic dependence of local communities on mangrove resources at the restoration sties (Carnus et al., 2006; Ellison, 2000; Field, 1999a). Therefore, it is very important to understand the hydrologic regime and soil characteristics of a site in the case of mangrove restoration (Mukherjee, et al., 2009).

Since the 2004 Indian Ocean Tsunami, the concept of planting 'bioshields' has become popular because there was evidence that many survivors were sheltered by coastal vegetation such as mangrove forests. This has led to the worldwide reaction to jump into the bandwagon of planting 'bioshields' scheme. Consequently, the scheme to plant mangrove trees particularly in developing countries has been promoted heavily by powerful global international environmental organization including UNEP and IUCN. These organizations are major donors for the Thai government and for many DMCR projects. The DMCR thus did not hesitate to join the scheme and came up with large scale mangrove plantation projects.

In fact, many studies found that bioshields do not necessarily protect the coast from all kinds of tidal waves, which differ in characteristics depending on the kinds of waves and the topography of each site. For example, the mechanism of waves produced by tsunami is different from that produced by tropical storms. Additionally, the quality of mangrove forests is an important factor in determining the effectiveness of a bioshield to sheltering from tidal waves. Results from various studies show that the impacts of these extreme events often also depend on

topography, near-shore bathymetry, distance from the shore and other physical factors (Cochard et al., 2008). In addition, the vegetation does not have an effect on immediate wave impacts. The actual cause of most disaster events is the rising water levels and associated debris, which is the leading cause of death and cannot be protected by bioshields (Cochard, et al., 2008; Rusty A. Feagin et al., 2008; Rusty A Feagin et al., 2010). More importantly, studies show that the vulnerability of coastal populations to episodic events is mostly likely due to inappropriate coastal development by placing more people in harm's way (Dahdouh-Guebas et al., 2005) or due to socio-economic factors such as lack of education regarding evacuation, physical exposure due to a substandard built environment, and a lack of post-event emergency response measures (Rusty A Feagin, et al., 2010).

Talumphuk villagers also argued that the location of the mangrove plantation does not have any effect with regards to storm shelter. Kongkang trees were planted on the Bay side, while the open sea side is where the storms and tidal waves have the most impact. The DMCR staff argued that, when they said, "protect from the storms," they meant protecting people who live on the west side of the bay, which is the Nakhon Si Thammarat Municipality. Nonetheless, the villagers argued that the impacts of the storm in the Bay, particularly the west side of the bay, is relatively insignificant. By the time the storm reaches another side of the bay, the storm should already have dissipated. In other words, Nakhon Si Thammarat Municipality is naturally sheltered by the bay and thus planting mangrove in Talumphuk to reduce the storm intensity on the opposite side of the bay does not make sense to the villagers. In addition, current evacuation system in Talumphuk is relatively well-established. The warning system allows for enough time for villagers to evacuate, with the support from the military who always send the trucks to pick up villagers to shelters in Pak Phanang.

Included in the mangrove narratives is the statement that "the mangrove plantation and rehabilitation in each area as well as the mangrove management system must go along with creating consciousness and the participation of the community… which must rely on the basis of thorough technical understanding in detail" (Aksornkoae, 1999). To foster 'consciousness and participation' among villagers, the DMCR organized training and seminars to build a group of 'Volunteers to Protect Mangrove Forest.' I had an opportunity to participate in one of the training sessions. The training is three-days long with some sessions about the benefits of mangrove forests. Many sessions were led by a Border Patrol Officer who performed activities similar to that of a Village Scout training, such as playing team games and pledging rituals. After finishing the training, there was a half day big ceremony that many high-level government officials came to join and gave a neck scarf and a certificate in front of a picture of the Royal family member. Many non-fisher villagers particularly the younger group who participated in the trainings really believe that mangrove plantation is good because it serves as a habitat for animals and a nursery for juvenile animals. Some of them believe that the DMCR plant mangrove trees so that encroachers won't take possession of "degraded forests," so DMCR is doing a good thing for people. On the other hand, villagers who participated in many mangrove trainings from the DMCR but fish in mangrove canals and the bay disagree with the DMCR. They said that "although we got many certificates from the Forest Department and the DMCR seminars and trainings, what they taught us is not true."

When I first learnt about mangrove plantation practices, I was very puzzled since it seems senseless to cut down the healthy mangrove to plant another species. Later, I realized that it was just another form of territorialization and making the forest "legible" by the state. Although territoriality of upland forest has been well documented and is now viewed critically,

territorializing mangrove forests is less well-known. I must admit that I was a fan of mangrove planting activities and even participated in many of them prior to doing this research. Mangrove planting seems like a good deed and harmless undertaking. In fact, it is a devious instrument the government uses to control the land, access to resources, and eventually people by demarcating the plantation and eventually prohibiting the access. It is easier, more controllable, and more powerful to demarcate a "plantation area." Since it is planted by the government, the whole area belongs to the government. In addition, natural forests are extremely difficult to patrol particularly for limited numbers of staff like those in Talumphuk. Planting one species in rows is the classic way to make the forest "legible"; both to count the area of the plantation and to count the numbers of trees planted, particularly to show the results of their performances to the funders and supervisors.

Similarly, James C. Scott (1998) explains many ways states undertook to make forest "legible" since the early modern European state building period around the 1700s to 1800s, which became the foundation of scientific forestry and the basis for forestry management in Europe, the U.S. and throughout the Third World. The first step was to transform the original, diverse, and chaotic forest into the uniform forest by reducing the number of species into monoculture and planting selected species in straight rows. In doing so, the forest could be "read" accurately and easily by officials. The protocol then could be standardized, codified, and taught. The new "legible" forest is also easy to be inspected and manipulated in a uniform manner according to a centralized prescription (Scott, 1998).

A conversation with the high-level DMCR officials confirms that the DMCR mangrove foresters are trained from the same tradition as explained which focuses on maximizing the revenue from timber harvest. For this, although the purpose of mangrove reforestation is

supposed to be different, they utilize the same technique that was used by the early modern European foresters. Another conversation with an 'insider'; a researcher and practitioner who works closely with the DMCR in coastal management for more than 20 years also confirms the above statement. The informant revealed that the DMCR officials want to acquire as much land area as possible so that they can have a consistent supply of budget for mangrove plantation. It must also specifically be Kongkang for the reasons explained above. To reiterate, one villager said "they (the DMCR) can cut down the healthy mangrove trees and throw them away to make space to plant Kongkang. But if we (villagers) cut them, they'll arrest us. But I asked them what they are going to do with the forest after planting Kong Kang, they said it can't be used for anything. It's prohibited. It's not that they plant for us to use."

Figure 5.5 Banners and signs posted by the DMCR to showcase and mark the area of mangrove plantations.

Mangrove Plantation for Whom?

More than 80% of villagers I interviewed identified themselves as poor but almost all of them except the Tao Kaes implied that they are vulnerable. Although poverty and vulnerability are interrelated, they are not necessarily the same. The poorer or those with lower cash income are not always the most vulnerable. Many villagers who earned a good amount of cash are also indebted. Fishers are inherently faced with risks in their everyday lives. The occupational hazards they have to face by going out to the sea with unpredictable weather conditions, coupled with unreliable natural resources render their occupation highly vulnerable. Even small disturbances such as increasing the travel distance to fishing grounds can dramatically affect the livelihoods of fishers. In order to access where they can fish, fishers have to spend more time and money to travel further into the sea and with fewer catches, and they have to work harder and make more trips just to cover the cost with enough money to spare for spending and to pay for gas and food for the next trip. If they travel further and spend more money for gas and food but catch nothing, they might have to borrow more money while they may already be indebted. In addition, fishing nets often get entangled with the Kongkang stilt roots, damaging their nets, resulting in more expenses to repair or replace the nets. As one informant said, “it’s true that planting mangrove does make our lives more difficult. It hurts poor people like us because it’s already difficult for us to make a living, and planting mangroves reduces spaces that we can make a living. Then when the water recedes, it’s even more difficult. The forest keeps expanding while the place for us to make a living keeps shrinking. The canals become shallower and narrower until there’s no place for us to fish. We then have to compete for space with each other and that makes matter even worse.”

The health of mangroves and canals and the ecosystem services they provide, as well as accessibility to their resources are vital to villagers' lives. It is where the poorest group of the poor come to make a living as their last resort since such activities require the cheapest equipment and gears. In the past, some people could just walk into the canal banks in the forest and caught three crabs with the cheapest gear they make and sell it for THB 300 - 500. This amount of money could feed their whole family of five for a day. If there was a day where they couldn't catch enough to sell, they could at least catch small fish or crabs for food for their family. When this service becomes unavailable or inaccessible for them, it means that they fall into the vicious cycle of debt that they cannot get out of. One informant stressed that, "the sea and the bay are our fishing ground. We make a living out of it. They (the government) plant the trees and reduce our fishing ground, what is it for? And then our next generations, there'll be no place left for them to fish. It's so useless and senseless." A 90-year-old informant added that, "the bay is getting shallower every day. In the future, the mangrove forests will expand to the water channel (in the middle of the bay) or almost there because the Big-leaf Kongkang will colonize the bay bank bit by bit. This means that they (the government) want more forest, they don't want the sea or the bay. But people want the sea more than the forest. They can make a living from the sea."

After getting many complaints and protests from the villagers about planting the wrong species in the wrong place for around two decades, the DMCR stopped planting Kongkang for a while. Recent mangrove planting projects done by the DMCR have been more like a staged act on special events such as on Royal Family's birthdays. During the first half of the time I spent in the field, the head of the regional Mangrove Department of the DMCR made a genuine effort to listen to what local people wanted. Since the incident when the villagers uprooted the seedlings

and opposed the planting, he agreed not to plant Kongkang anymore. However, towards the end of my field research, a new person took the position and began to resume Kongkang plantation again.

Conclusion

This chapter explores the events leading to the transformation of a healthy mangrove forest into a monocultural Big-leaf Kongkang plantation, and the subsequent impacts on the ecosystem health and the livelihoods of small-scale fishers in Talumphuk. It argues that mangrove narratives are used as a state instrument to take possession of the forestland and take control of access to forest resources. Such discursive practices from mangrove narratives not only unwarrantedly deprive local resource users of their rights but also create numerous environmental and ecological consequences which in turn exacerbate the livelihood conditions of local fishers, particularly the poor.

Although the discourse of tree planting is nothing new, the image of planting mangrove has still been perceived as the benevolent act including by many scholars. This dissertation shed lights on how mangrove planting, the activities perceived to be different than upland tree planting, is in fact also the product of the discourse with underlying economic and political agenda.

CHAPTER 6. CONCLUSION

Although Thailand has never formally been colonized by the Western nations, Thailand was influenced by the Western ideologies to such a great extent that it had been indirectly colonized by the West. The European influence on the Thai state resulted in a major bureaucratic and administrative reform in 1892. The Thai state, or Siam at that time, adopted various methods used by the European nations as a means for "state building" as discussed by James C. Scott (1998). These methods involved making its subjects and resources "legible." Later, when the Thai state adopted the state-led, growth oriented economic development and modernization ideologies from the U.S. after the WWII, the exploitation of the country's natural resources increased further. Even after the full adoption of neoliberalism after the 1997 Asian financial crisis, Thailand has continued to exploit its resources, but in the guise of "conservation" resulting in even more marginalizing of the rural poor.

In order to justify the ideology of forest-based development of the country, the state must make the subjects believe that the existing problems of forest degradation and reduction was not caused by a mistake of the state. There has never been any mention of the forest being destroyed by concession permits for legal timber production, or by the massive construction of large-scale infrastructure such as roads, dams, and reservoirs, or policies that encouraged intensive economic agriculture and aquaculture for export including shrimp farming. Instead, the state has blamed the decline of forests on two factors; namely the growth of the population, and the overexploitation by the rural poor by shifting cultivation or charcoal making from mangrove forests for household uses. The state also used legal institutions to certify that peasants illegally encroached into the forest, and passed on these claims to educational institutions and the media. In addition to cultivating this concept as the dominant view, the state strengthened the legitimacy

of forestry as a "principle of forestry science" by stating it was necessary for the economic development of the country since it supports "sustainable" logging and reforestation (Kuhacharoen, 1991).

Mangrove narratives can be considered products of the "coproduction" process between "scientific forestry orthodoxy" and "environmentalism" (Forsyth, 2003). The rise of environmentalism in Thailand in the 1970s, which was influenced by Western environmentalism, reinforced the dualistic view of human and the "wilderness." Since the 1970s, the Americans and Europeans perception of the "wilderness," which in this case is the tropical rainforest including mangrove forests, has been transformed from "savage" and a "waste" into a powerful iconic view of "unfallen, sacred land – a veritable Garden of Eden" (Cronon, 1996, p. 12) particularly by the new middle class. Cormier-Salem and Roussel illuminatingly describe that mangrove, once was merely zones for resource exploitation, has become an asset or 'natural heritage' that needed protection. By turning mangrove from mere resource to heritage with the present-day attempt to even "monumentalize" it, mangrove is just one of the examples of the "politics of domination" (Cormier-Salem, 2006). In doing so, forest dwellers have been portrayed by the state as "backwards" and the major forest destroyers because they don't have "scientific knowledge" in forest management (Kuhacharoen, 1991). Such a view has reinforced the inherent state's inherent desire to control its resources and accesses, resulting in various exclusionary policies that disenfranchise and marginalize many local people as illustrated in Talumphuk.

Although the villagers in Plaisai and Banlaem have been faced with seemingly different issues, their main problems stem from or were exacerbated by mangrove narratives and discursive practices. Mangrove forestry was practiced prior to the shrimp farming boom. Mangrove concessions were given to generate income for the state using the same techniques

and rules as those of upland forest. In the 1990s, after two decades of environmentalism in Thailand, the issue of mangrove deforestation was raised as a response to the proliferation of abandoned shrimp farms and a decrease in mangrove areas. Ironically, shrimp farming, which was supported and promoted by one side of the government as means to stimulate economic development, was now claimed by another side of the government to be an evil mangrove destroying machine. In response, the image of mangroves as the green goodness needed to be created to support the efforts of mangrove re/afforestation, which later became even more popular than the "coastal guardian" after the 2004 Indian Ocean tsunami. As a result, mangrove planting has been endorsed by the public as a good deed, preventing criticism against any mangrove discursive practices by the state.

This research incorporates historical and ethnographic analyses to illustrate the complex relationships amongst the Western ideologies, Thai state, environmental discourse, regional development, and the local livelihoods. Talumphuk can be considered as an outpost since it is located far away from the Thai central government. Yet, it can also be considered as the last frontier of Thai forests, which makes it desirable for the state to stake its claim by means of territorialization (Vandergeest & Peluso, 1995). To do this, mangrove narratives have become the most powerful tool for the state. As a result, the roles of the state appear to be contradictory, being both mangrove destroyers and mangrove protectors. More importantly, the devastating results from such discursive practices on local people, particularly the poor are inevitable.

This research illustrates that shrimp farming plays an important role in connecting the economic development ideology with the environmentalism ideology. Shrimp farming was initiated, supported, and promoted by the Thai government and international institutions to increase export earnings and stimulate Thai economic growth. On the other hand, shrimp

farming was used by Thai state to justify its claim, authority, and legitimacy on mangrove management, which was also supported by international institutions. Therefore, shrimp farming not only caused mangrove deforestation and degradation, but also served to reinforce the state's justification to take control over mangrove forest. In both cases, the costs of shrimp farming were borne by local communities, particularly the poor, as illustrated in the cases of Pak Phanang and Talumphuk.

The livelihoods of Talumphuk fishers are inherently precarious. They must face the everyday unpredictable conditions of weather, their health, resource availability, environment, and market fluctuation, among other factors. Even though many fishers already diversify their fishing types and areas, they are still vulnerable to even the slightest change. Talumphuk was well-known as a site that was formerly devastated by a storm, and thus has only been a focus of hazard responses during the storm season. However, by focusing on the risk of the hazard, the attention is drawn away from the underlying social causes of their everyday vulnerability such as exclusion, marginalization, exploitation, and social differentiation. Therefore, it is necessary to have a clear understanding of the causality to draw attention back to the social and political-economic production of marginality (Ribot, 2011).

This research also explains how the precarious livelihoods of Talumphuk fishers have been affected by the discursive practices that resulted from the "coastal guardian" notion. In this case, the storm not only brought changes in the infrastructural development in Talumphuk which eventually led to the shrimp farming development and mangrove deforestation, but also created the perception that Talumphuk is vulnerable to hazards and needs the protection of mangrove forests as a "coastal guardian." The vulnerability of Talumphuk fishers are not caused so much

by hazards, but by on-the-ground unequal access to the multitude of resources, which stems in part from unequal social and political-economic relations of power.

Despite being a relatively well-known place with regards to disaster responses, the mangrove plantation activity occurred in Talumphuk is not as well-known to the public. The only information publicized is that the mangrove planting has been done, but how it's done has never been disclosed. Although Talumphuk is perceived as "model village" because it receives more public attention, the issues relating mangrove plantation are not unique. As an example, the neighboring subdistrict, Kongkong, is an unknown small fishing community but has faced with the same issues regarding mangrove plantation.

Although this research does not directly address the issue of the poverty and vulnerability of the Talumphuk fishers, it demonstrates that uncritical applications of discursive practices from environmental narratives can pose negative impacts to both the environment and the livelihoods of the local poor. This understanding may draw public attention and funding to address the underlying social, political-economic causes of vulnerability, rather than wasting the budget on discursive practices that exacerbate the precarious livelihoods.

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